

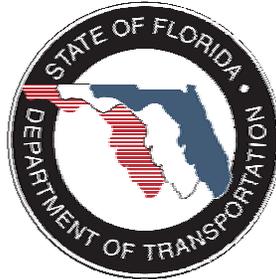
# **ENDANGERED SPECIES BIOLOGICAL ASSESSMENT**

## **FEC AMTRAK PASSENGER RAIL STUDY**



From: Jacksonville (Duval County)  
To: Miami (Miami-Dade County)

**Federal Aid Project Number: FR-HSR-09-003**



Florida Department of Transportation  
District Four  
3400 West Commercial Boulevard  
Fort Lauderdale, Florida 33309

**July 2010**

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## 1.0 INTRODUCTION

The Florida Department of Transportation (FDOT), in conjunction with the Federal Railroad Administration (FRA), is conducting a Project Development and Environment (PD&E) Study to evaluate alternatives to provide intercity passenger rail service along nearly 350 miles of Florida's east coast between Jacksonville in Duval County and Miami in Miami-Dade County.

The project proposes to restore passenger rail service, in the form of Amtrak, on the existing Florida East Coast (FEC) Railway freight rail line from Jacksonville to West Palm Beach, with service continuing south to Miami on the existing South Florida Rail Corridor (SFRC) Amtrak route. The proposed FEC Amtrak Passenger Rail project consists of the following infrastructure improvements in order to add two southbound and two northbound trips per day:

- improvements to the existing FEC rail line between Jacksonville and West Palm Beach
- eight new stations between St. Augustine and Stuart; and
- rebuilding the connector track (Northwood Crossover) to the existing SFRC.

As further described in Section 2.2, the need for the project stems from continued growth in long-distance travel to Florida's east coast cities; an incomplete, inconvenient, and overburdened transportation network; and depressed economic conditions.

Exhibit 1.1 shows the project study area and proposed station locations under evaluation. No infrastructure improvements are proposed south of the Northwood Crossover in West Palm Beach. Four related projects are proposed by others and are connected actions: planned Jacksonville Amtrak Station, the Miami Amtrak Station as part of the Miami Intermodal Center (under construction), completed Tri-Rail Double-Tracking project (on SFRC), and the South Florida East Coast Corridor Transportation Analysis (SFECCTA). The FEC Amtrak Passenger Rail project was also known as the Florida East Coast Amtrak Service project.

The purpose of this report is to present the findings of the Endangered Species Biological Assessment (ESBA) for the proposed project and to meet the requirements of Section 7 of the Endangered Species Act (ESA) of 1973, as amended. The ESA requires federal agencies, in consultation and with the assistance of the Secretaries of the Departments of Interior and Commerce, to insure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of critical habitat of such species.

Under the law, the Secretary of the U.S. Department of Interior, acting through the Fish and Wildlife Service (FWS) and the Secretary of the U.S. Department of Commerce, acting through the National Marine Fisheries Service (NMFS), have broad powers to protect and conserve all forms of wildlife, plants, and marine life they find in serious jeopardy. This report will be sent to the FWS and NMFS for their review and comments.

No Federally-listed species were recorded during the field surveys conducted for this study. Discussion of potential involvement with Federally-listed species that have been recorded by others is provided in Section 5.0.



## **2.0 PROJECT DESCRIPTION AND NEED**

### **2.1 Project Description**

The proposed FEC Amtrak Passenger Rail project consists of providing intercity passenger rail service along nearly 350 miles of Florida's east coast between Jacksonville and Miami on the existing FEC Railway freight rail line and the existing SFRC Amtrak route. Major infrastructure includes improvements to existing FEC railway between Jacksonville to West Palm Beach, eight new stations, and rebuilding the connector track (Northwood Crossover) to the existing SFRC. The proposed passenger service would be provided by expanding Amtrak's long distance passenger rail service from Jacksonville to West Palm Beach, with connecting service to Miami via the existing Amtrak route on the SFRC.

#### ***2.1.1 Project Study Area***

The project study area primarily consists of the existing FEC Railway corridor from Jacksonville to the Northwood Crossover in West Palm Beach (approximately 280 miles), and the SFRC from the Northwood Crossover in West Palm Beach to Miami (approximately 65 miles). The project corridor traverses eleven counties along Florida's east coast: Duval, St. Johns, Flagler, Volusia, Brevard, Indian River, St. Lucie, Martin, Palm Beach, Broward and Miami-Dade as shown in Exhibit 1.1. The project study area also includes the Northwood Crossover (generally parallel to 27<sup>TH</sup> Street) from the FEC to the SFRC and the station alternatives in each of the eight cities proposed to include new stations.

The northern terminus will be the existing Jacksonville Amtrak station, with an ultimate terminus at the planned Jacksonville Regional Transportation Center (JRTC). The southern terminus will be at the Miami Central Station (MCS), which is part of the Miami Intermodal Center (MIC) project at Miami International Airport (MIA), and is scheduled for completion by 2012. The environmental effects associated with relocating Amtrak passenger service to the MCS from the existing Miami Amtrak Station were documented in a Final Environmental Impact Statement, which resulted in a Record of Decision (May 1998) for the MIC proposed improvements. Any improvements and project effects associated with the proposed JRTC or relocating Amtrak passenger service from the existing Jacksonville Amtrak station will be studied under a separate environmental determination and are not included in the FEC Amtrak Passenger Rail study and proposed action.

For the purposes of the ESBA, impacts were evaluated for the 100-foot-wide FEC right-of-way from the existing Jacksonville Amtrak Station to the Northwood Crossover. At the proposed station locations, the study area encompasses a 500-foot radius surrounding each location alternative. As the existing Amtrak passenger service is provided on the SFRC between West Palm Beach and the existing Miami Amtrak

station, no infrastructure improvements are required on the SFRC south of the Northwood Crossover to accommodate the proposed action.

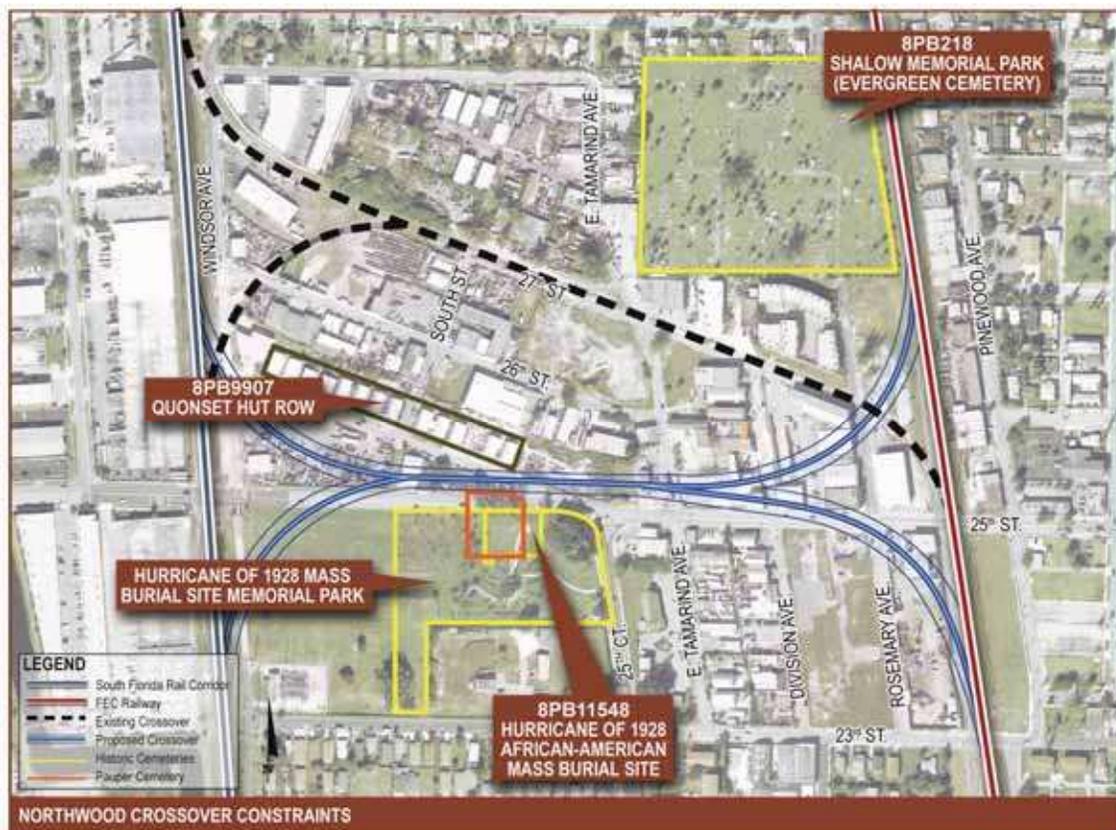
### ***2.1.2 Proposed Improvements***

The following infrastructure improvements are proposed between Jacksonville and West Palm Beach in order to provide intercity passenger rail service, accommodate the passenger trains at speeds up to 90 mph and continue FEC Railway's freight service:

- Eight new stations between Jacksonville and Stuart - St. Augustine, Daytona Beach, Titusville, Cocoa, Melbourne, Vero Beach, Fort Pierce, and Stuart
- New platforms at each of the proposed stations (approximately 1000 ft. long)
- New track sidings (double tracking approximately 2,500 feet in length) at the new stations;
- Track signal control;
- Twenty-nine (29) miles of surface replacement track work on the existing FEC rail line (from Jacksonville to West Palm Beach) within existing curves. This will involve adding 6 inches of grade to the rail bed to accommodate the increased speed.
- Upgrades at existing highway and pedestrian crossings on the FEC Railway corridor to enhance safety;
- New railroad crossings at sidings only; and
- Crossover track improvements at the Northwood Crossover in Palm Beach County.
- The proposed platforms, sidings and proposed curve track replacement are primarily located within the existing FEC right-of-way. Minimal right-of-way is anticipated for the proposed stations.

### ***2.1.3 Proposed Northwood Crossover***

The Northwood crossover is an existing track connecting the FEC railway with the SFRC in the Northwood section of West Palm Beach. This is a short connector track to the FEC railway located approximately 2,100 feet east of the SFRC. The existing connector is oriented in a northwest/southeast direction between the two rail lines. In its current configuration, the existing connector track is not usable for intercity passenger rail traffic due to a missing connection in the northeast quadrant leading to and from the FEC railway and points north. It is proposed that the Northwood crossover be replaced and reconstructed immediately south of its current alignment (generally parallel to, and north of, 25<sup>th</sup> Street) to accommodate train traffic to and from points north on the FEC railway (Exhibit 2-1). Minor right-of-way acquisition would be required at the proposed crossover in West Palm Beach.

**EXHIBIT 2-1**  
Northwood Crossover**2.1.4 Proposed Stations**

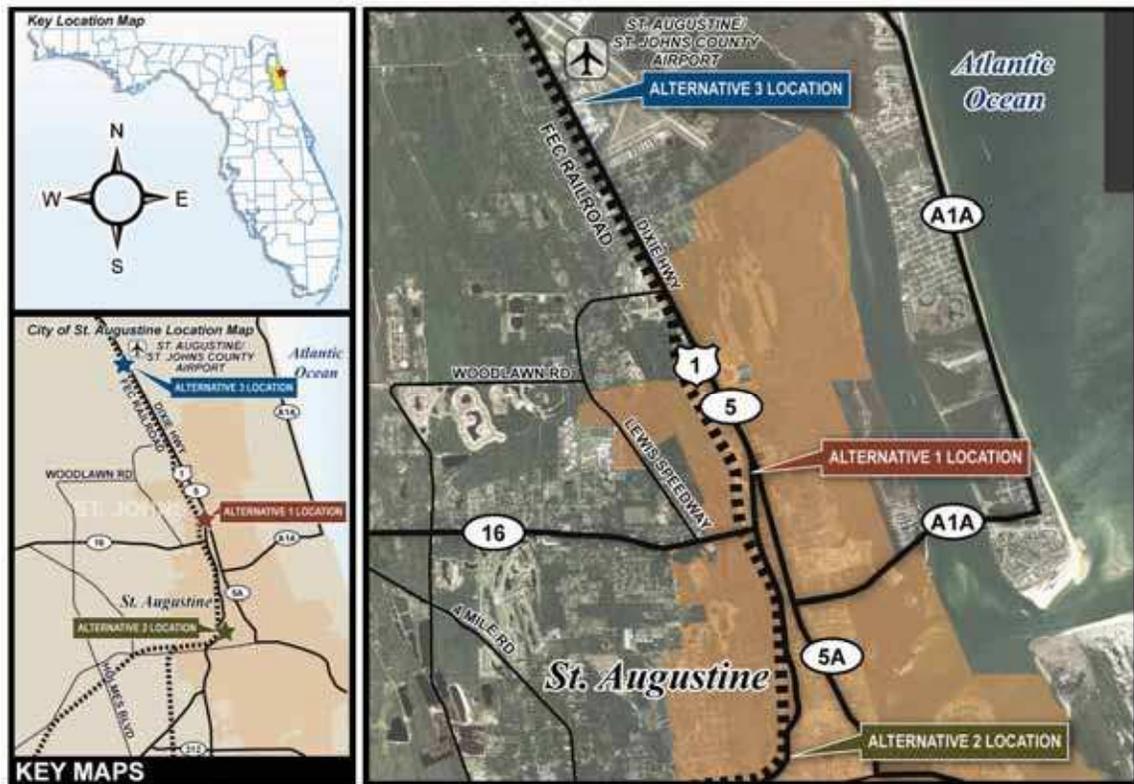
Eight new passenger stations are proposed to be constructed between Jacksonville and Stuart as part of the project, at locations in:

- St. Augustine
- Daytona Beach
- Titusville
- Cocoa
- Melbourne
- Vero Beach
- Fort Pierce
- Stuart

The location of new stations along the FEC Railway was developed by the FDOT in consultation with local government agencies, regional planning councils, metropolitan planning organizations, Amtrak, and the FEC Railway. Interagency meetings were conducted with local officials of these cities. In addition, public workshops and station design sessions were held in each of the eight cities with proposed stations. Proposed alternative stations locations are shown in Exhibits 2-2 to 2-9.

**EXHIBIT 2-2**

## St. Augustine Project Location Map



- **Alternative 1 (U.S. 1 at San Marco Avenue)** is located north of historic downtown St. Augustine east of the FEC Railway and west of U.S. 1 near the intersection of U.S. 1/San Marco Avenue. This site was the location of a former FEC passenger rail station (circa 1960) and turnaround for the FEC Railway. The property, maintenance yard and existing on-site buildings are owned by the FEC Railway.
- **Alternative 2 (U.S. 1 at Carrera Street)** is located within historic downtown St. Augustine west of U.S. 1 across from Lemon Street and Carrera Street. This site is an open field along the east bank of the San Sebastian River.
- **Alternative 3 (St. Augustine/St. Johns County Airport)** is located north of St. Augustine to the west of U.S. 1 across from the St. Augustine/St. Johns County Airport. This site is a vacant wooded area owned by the airport authority.

**EXHIBIT 2-3**

## Daytona Beach Project Location Map

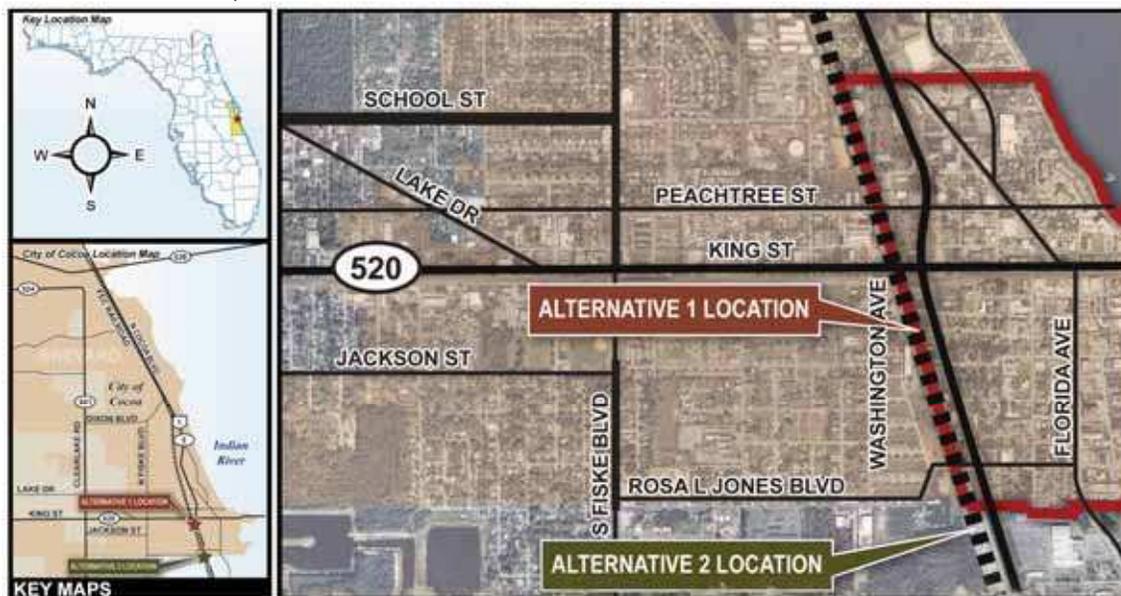


- **Alternative 1 (South of International Speedway Boulevard)** is located adjacent to the east side of the FEC Railway between International Speedway Boulevard and Magnolia Avenue. This site is developed and situated near several residential, commercial and industrial areas.
- **Alternative 2 (South of Orange Avenue)** is located adjacent to the east side of the FEC Railway between Orange Avenue and Live Oak Avenue. This site is developed and situated near several residential, commercial and industrial areas.
- **Alternative 3 (North of Orange Avenue)** is located adjacent to the east side of the FEC Railway and north of Orange Avenue. This site is developed and situated near several residential, commercial and industrial areas.
- **Alternative 4 (South of Live Oak Avenue)** is located adjacent to the west side of the FEC Railway between Live Oak Avenue and Loomis Avenue. This site is developed and adjacent to Live Oak Park (a public recreational facility). Several residential, commercial and industrial areas are located near the site.
- **Alternative 5 (North of International Speedway Boulevard)** is located adjacent to the east side of the FEC Railway north of International Speedway Boulevard. This site is developed and situated near several residential, commercial and industrial areas. A major transmission facility hub is located directly adjacent to the site.

**EXHIBIT 2-4**  
Titusville Project Location Map



- **Alternative 1 (South of Julia Street)** is located in downtown Titusville to the east of the FEC Railway in the vicinity of Julia Street. This site is owned by FEC Railway and occupied by a FEC Railway storage and maintenance yard.
- **Alternative 2 (North of Pine Street)** is located in downtown Titusville to the east of the FEC Railway in the vicinity of Pine Street. This site was the former location of the passenger rail station in Titusville.
- **Alternative 3 (Space Coast Regional Airport)** is located west of the FEC Railway and U.S.1 near the Space Coast Regional Airport in Brevard County. This site is an undeveloped wooded property and the surrounding area is mostly undeveloped.
- **Alternative 4 (South of S.R. 50)** is located in Brevard County west of U.S. 1, east of the FEC Railway, north of the NASA Causeway and approximately 1 mile south of S.R. 50.

**EXHIBIT 2-5**  
Cocoa Site Location Map

- **Alternative 1 (South of Stone Street)** is located in downtown Cocoa east of the FEC Railway, west of U.S. 1 and south of S.R. 520. The station site is located at the western terminus of Lemon Street adjacent to the FEC Railway. Alternative 1 involves parcels south of Stone Street that are vacant and undeveloped. There are several residential and commercial areas near the site.
- **Alternative 2 (South of Rosa L. Jones Boulevard)** is located south of downtown Cocoa, west of U.S. 1 and south of Rosa L. Jones Boulevard. This site is owned by FEC Railway and occupied by an FEC Railway storage and maintenance yard. One of the existing on-site buildings is the location of the former Cocoa passenger rail station.

**EXHIBIT 2-6**  
Melbourne Site Location Map



- **Alternative 1 (Melbourne International Airport)** is located north of the City of Melbourne, east of the Melbourne International Airport, and west of the FEC Railway. This site is mostly undeveloped vacant property located between South Apollo Boulevard and the FEC Railway. The site is situated near several residential neighborhoods.
- **Alternative 2 (South of U.S. 192)** is located east of the FEC Railway, west of U.S. 1, and south of U.S. 192. The station site is located just south of Jernigan Avenue in downtown Melbourne. This site is developed and situated near several residential, commercial and industrial areas.
- **Alternative 3 (North of U.S. 192)** is located east of the FEC Railway, west of U.S. 1, and north of U.S. 192/Melbourne Causeway. The station site is located just north of Palmetto Avenue in downtown Melbourne. This site is a vacant property owned by FEC Railway and situated near several residential and commercial/retail areas.

**EXHIBIT 2-7**

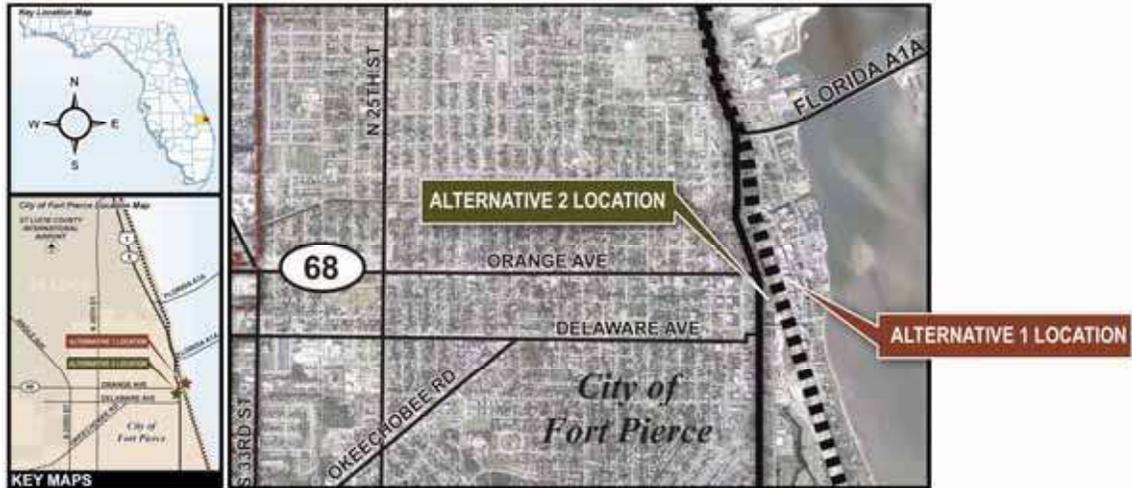
## Vero Beach Project Location Map



- **Alternative 1 (South of 19<sup>th</sup> Place)** is located in downtown Vero Beach west of the FEC Railway and south of 19<sup>th</sup> Place. This site is occupied by a refurbished historical diesel plant building and situated near industrial land uses.
- **Alternative 2 (North of 21<sup>st</sup> Street)** is located in downtown Vero Beach west of the FEC Railway and north of 21<sup>st</sup> Street. This site is occupied by the Vero Beach Community Center which provides onsite public recreational facilities. The surrounding land uses are primarily commercial/retail and residential.
- **Alternative 3 (North of 23<sup>rd</sup> Street)** is located in downtown Vero Beach west of the FEC Railway and north of 23<sup>rd</sup> Street approximately 1 block north of Alternative 2. This site is occupied by the Indian River County Historical Society Museum. The surrounding land uses are primarily commercial/retail and residential.

**EXHIBIT 2-8**

## Fort Pierce Project Location Map



- **Alternative 1 (Orange Avenue - East of FEC)** is located in downtown Fort Pierce south of Orange Avenue, north of Citrus Avenue, and east of both U.S. 1 and the FEC Railway. The proposed station site is located within a parking area of a retail strip mall. The surrounding land uses are primarily commercial/retail.
- **Alternative 2 (Orange Avenue - West of FEC)** is located in downtown Fort Pierce south of Orange Avenue, north of Citrus Avenue, east of U.S. 1, and west of the FEC Railway. The proposed station site is located on an industrial property. This industrial site is the location of Rinker Industries which is serviced by FEC Railway via an onsite railroad spur to accommodate existing freight operations. The surrounding land uses are primarily commercial/retail and industrial

**EXHIBIT 2-9**  
Stuart Project Location Map



- **Alternative 1 (Kiwaniis Park)** is located in downtown Stuart adjacent and west of the FEC Railway just north of the intersection of SE Dixie Highway and SE 5<sup>th</sup> Street. The Kiwanis Park (a public playground/recreational facility) is located just west of this potential station location.
- **Alternative 2 (East Coast Lumber)** is located in downtown Stuart east of the FEC Railway, south of Ocean Boulevard, and west of SE Flagler Avenue. The existing land use is commercial/industrial and the site is occupied by East Coast Lumber.
- **Alternative 3 (Stypmann Boulevard)** is located in downtown Stuart east of the FEC Railway, south of Ocean Boulevard, and just south of the intersection of Stypmann Boulevard/SE Flagler Avenue. The proposed station operations would be located within a portion of the proposed Martin County Transit Depot. The transit center was awarded funding through ARRA and is under design with anticipated construction by 2011.

There are two types of stations proposed: small and medium. The small stations would be unstaffed and consist of a platform, canopy, signage, lighting, and a semi-enclosed shelter. Medium stations are planned for St. Augustine and Cocoa. Additionally, Daytona Beach is planned to be a seasonally-staffed station and will require a medium station building.

Paved parking may be provided at the proposed stations. The number of parking spaces would vary by location. As the stations are in highly-urbanized areas, limited or no parking facilities may be provided at some locations. Patrons accessing these stations would be anticipated to either walk and/or use adjacent parking facilities to access the

station. The stations have been located to facilitate potential future transit-oriented development and intermodal connections. The stations and parking areas would be compliant with the Americans with Disabilities Act.

New passing track (rail sidings 2,500 feet in length) would be added at stations to move Amtrak trains off the mainline tracks while serving the proposed stations. Improvements to the Jacksonville and Miami Amtrak stations have been proposed by others. Trains would use the existing Hialeah Yard for maintenance.

### ***2.1.5 Description of the Intercity Corridor Service***

As of June 2010, the State of Florida is served by two Amtrak auto trains which provide service between Lorton, VA and Sanford, FL, and four Amtrak intercity passenger service trains which provide service between New York and Miami: Numbers 91 and 92 – the Silver Star, and 97 and 98 – the Silver Meteor.

The proposed service would initially consist of two southbound and two northbound trains per day, with a total trip time between Jacksonville and Miami of less than seven hours. A phased approach to developing intercity passenger rail service is proposed. The first phase would provide the infrastructure, stations, and equipment (fleet) to extend Amtrak service from Jacksonville to Miami by 2012. Ensuing phases would expand passenger rail service along the corridor, such as relocating Amtrak's northern terminus to the downtown JRTC, adding corridor rail service south from the JRTC to St. Augustine, and extending existing Tri-Rail Commuter Rail service north from West Palm Beach to Jupiter.

Additional passenger trains may be required to support the proposed service both to accommodate growth anticipated from expansion of service to new cities, and to provide the necessary different types of cars. The Silver Star and Silver Meteor typically consist of a combination of baggage, dining, sleeping and coach cars. Currently offered First Class and Coach Class services would be operated on both the inland and coastal routes, consistent with Amtrak's current service quality standards for long distance trains. Train amenities include full dining service, first class sleeping accommodations, and checked baggage service. Station amenities would vary by location, but would be consistent with Amtrak's adopted station standards. Fare structure for the new service has not been determined, but would be consistent with the existing Amtrak fares in Florida.

The existing FEC railway track, signals, and grade crossings would be upgraded to accommodate passenger train speeds up to 90 mph. Other rail services to benefit from this program include the freight services of the FEC railway and the passenger rail services of Tri-Rail. The project increases capacity along the corridor for freight service and the proposed extension of Tri-Rail to Jupiter.

Phase 2 would add additional trains and expand passenger rail corridor service to include Jacksonville to Cocoa routes. The equipment and operation costs for the future phases are not included in the proposed action; however, the infrastructure

improvements included in the proposed improvements will accommodate the Phase 2 improvements.

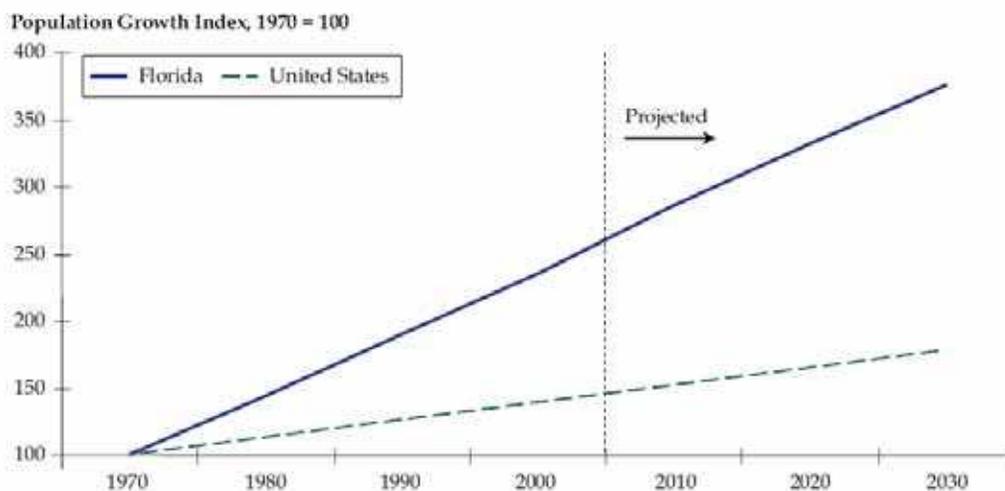
## 2.2 Project Need

The need for the project stems from continued growth in long-distance travel to Florida's east coast cities; an incomplete, inconvenient, and overburdened transportation network; and depressed economic conditions. The following sections describe the need for the project in more detail.

### 2.2.1 Improve Transportation Connectivity

The need for the expanded Amtrak service is directly related to the expected growth in population and intercity travel demand to Florida's eastern communities. Florida's population is expected to increase at a rate more than double the national average for the foreseeable future (refer to Exhibit 2-10) (FDOT, 2005).

**EXHIBIT 2-10**  
Projected Population Growth, Florida vs. U.S.



Source: U.S. Census Bureau and Florida Office of Economic and Demographic Research.

Source: 2006 Florida Freight & Passenger Rail Plan (FDOT, February 2007)

The University of Florida estimates that 25 million people will live in the state by 2035, compared to the current population of approximately 17 million. Population in Duval County is projected to increase from 778,000 to 1.2 million residents by 2035. Florida's current transportation system has not kept pace with the tremendous increase in population, economic activity, and tourism in the state. The interstate highway system, regional commercial airports and conventional passenger rail system serving the intercity travel market are operating at or near capacity and will require large public investments for maintenance and expansion to meet existing demand and future

growth. Moreover, the ability to expand many major highways and strategic airports is uncertain as needed expansions may be impractical or may be constrained by physical, economic and/or other factors.

The influx of new residents is so significant, the state, despite careful planning and strategic investments in infrastructure, simply cannot adequately support transportation demand. This is especially true in its urban areas. In Florida and other high-growth states, highways cannot be constructed fast enough and airports currently operate at or above capacity. A growing travel market is associated with baby-boomers, retirees and new immigrants who are selecting Florida's east coast communities for second homes. St. Augustine, Vero Beach, Melbourne, Fort Pierce and Stuart are increasingly being selected for second homes for both northerners, who enjoy Florida's mild winter weather, and Floridians, who take respite from the urban stresses of Southeast Florida and Jacksonville.

City-to-city travel is on the rise. One key city pair for intercity travel is Jacksonville and Miami. The stretch between this city pair is densely populated with several major population centers including St. Augustine, Daytona Beach, Titusville, Cocoa, Melbourne, Vero Beach, Fort Pierce and Stuart. There is no passenger rail service along the FEC railway to serve intercity travel between these communities. Instead they depend mainly upon roadway connections. The presence of several airports allows for limited connections for passengers via air. The FEC railway also connects these communities, however, only freight traffic moves on the corridor at this time. Substantial additional capacity is needed to assist seaports in meeting expected growth in freight and cruise activity. For rail and urban transit systems to serve as viable options for the movement of people and goods within and between urban areas, investments in additional passenger and freight rail capacity will also be needed.

The proposed action would connect to cruise ports, regional transit systems, and regional airports along the east coast of Florida. Passengers from the Northeast, Mid-Atlantic, and Southeast would not be reliant solely on the automobile to visit Florida's east coast attractions, vacations homes, and business opportunities. Local shuttle services would provide connections for Amtrak passengers to tourist destinations, hotels, and other amenities. In addition, the proposed action would provide a mobility option for travel to Florida's east coast communities for Florida residents. Use of these additional connections also plays a key role in improving transportation mobility. The FEC rail corridor between Miami and Jacksonville has the potential to serve over 8.6 million people by 2035.

### ***2.2.2 Enhance Transportation Mobility***

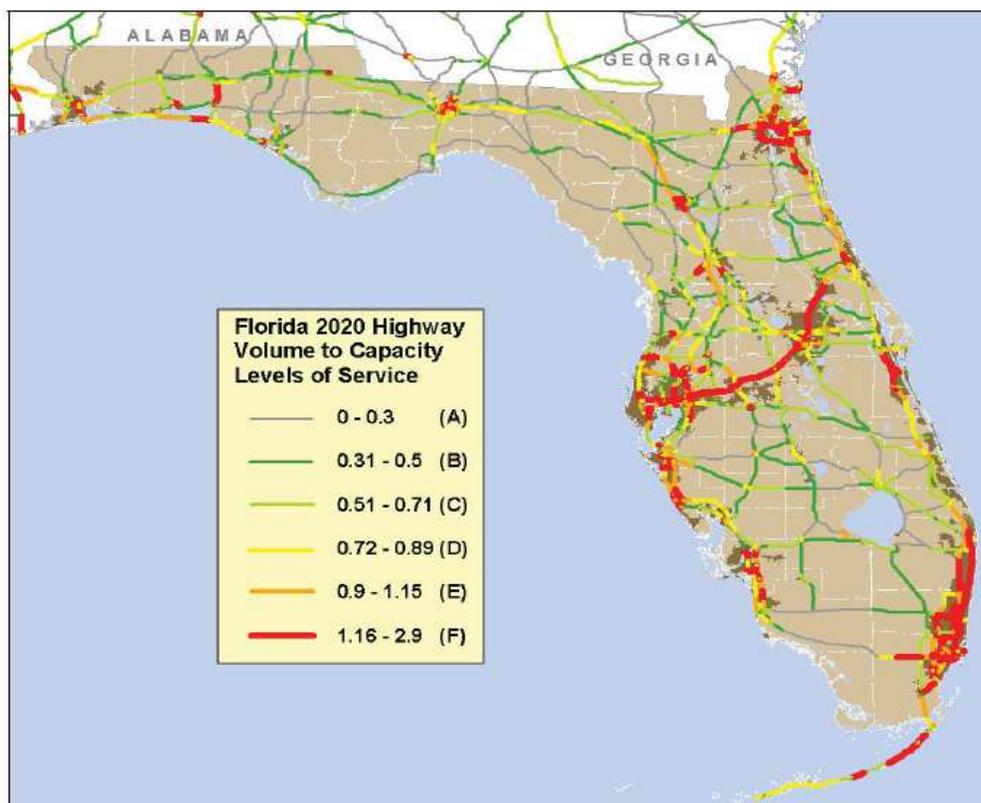
As the population grows, traffic congestion in Florida worsens, especially in the state's booming urban areas. Many urban and inter-regional highway corridors are heavily congested during peak periods or are expected to be by 2020, even with planned capacity improvements (Exhibits 2-11). Florida's historic eastern cities are accessed by sparse commercial air service to one regional airport, limited intercity bus service, rental cars

from distant major airports, and congested Interstate 95 (I-95). Exhibit 2-12 summarizes specific mobility issues facing the project corridor.

With several large-scale developments recently completed, others under construction, and many more anticipated in both the short- and long-range time frames, it is evident that this overcapacity condition will become an even greater problem. The current and projected future roadway congestion will continue to result in deteriorating air quality, reduced reliability, and increased travel times on Florida highways. Out-of-town visitors are dependent on car rentals for intercity mobility. The dependence on automobile mobility and fuel cost fluctuations is negatively affecting the economy, quality of life, and air quality in Florida's metropolitan areas as the transportation system becomes less reliable as travel demand increases.

**EXHIBIT 2-11**

Florida Highway Congestion, 2020 Level of Service Estimates



Source: 2004 Passenger Rail Component of the Florida Rail Plan (June 2005)

Transportation mobility is defined as the ease with which people travel. Measures of mobility include travel time and traffic congestion, or level of service—measures linked to the efficiency of transportation movements. The proposed action would provide a mobility option to the congested I-95 corridor and the congested airways serving

Orlando and Southeast Florida. More than 100 local governments, agencies, and other groups have adopted resolutions and letters of support requesting passenger service be established on this FEC railway along Florida’s east coast. Passenger rail would steadily become more important as an alternative to the congestion on Florida’s highways, and would increase the mobility of tourists, business travelers, and citizens, especially older Floridians (FDOT, 2009).

**EXHIBIT 2-12**  
Mobility Issues

Travel Mode	Mobility Deficiency
Air	<ul style="list-style-type: none"> <li>Daytona Beach is the only airport with commercial air service, coming from either Charlotte or Atlanta. In-state air travelers must connect through these two cities to access project area cities.</li> <li>Major airports at Jacksonville, Orlando and West Palm Beach have much higher commercial service, but rental cars and the interstate system must be used to access the project study area.</li> </ul>
Greyhound	<ul style="list-style-type: none"> <li>Greyhound provides limited service to the project area. The cities of Stuart, Fort Pierce and Cocoa are not served by Greyhound.</li> <li>No other communities in the project area are served by Greyhound.</li> </ul>
Bus and Mass Transit	<ul style="list-style-type: none"> <li>St. Augustine, Titusville and Melbourne are served by two buses northbound and four buses southbound per day.</li> <li>Daytona Beach has the highest service level with five buses per day in each direction.</li> </ul>
Highway	<ul style="list-style-type: none"> <li>The current capacity and connectivity of Florida's transportation system is significantly insufficient to meet existing and especially future demand and mobility.</li> <li>I-95 in Palm Beach is experiencing annual average daily traffic volumes from approximately 169,200 vehicles per day to almost 202,600 vehicles per day and is expected to experience daily traffic volumes of 290,000-plus vehicles per day by the year 2033.</li> </ul>
Rail	<ul style="list-style-type: none"> <li>The existing intercity passenger service is limited to two round trip trains per day with limited stops serving an estimated population of 6 million people along the east coast of Florida.</li> </ul>

**2.2.3 Stimulate Economic Development**

Florida's economy has been battered by falling home prices, a spike in the number of foreclosures statewide, the collapse of national financial markets and the subsequent credit freeze, influx of immigrants from disaster areas including Haiti and Chile, retirement of the Space Shuttle program and the effects of a global recession. Florida's unemployment rate continues its upward trend, with the seasonally-adjusted rate for December 2009 hitting 11.8 percent representing the highest level in 35 years. The state's jobless rate is up 4.2 percentage points from last year at this time and almost 2 points higher than the national average of 10 percent. The official unemployment rate does not include individuals who have stopped looking for work, those who have been forced into part-time work, or those who have accepted jobs far below their skill levels. When

those people are added, the percentage of workers who are unemployed or underemployed exceeds 19.5 percent. Since April 2007, Florida has lost over 720,000 jobs across (virtually) all industries. The construction industry has taken the hardest hit. In addition, 23,000 project area jobs are expected to be lost due to the retirement of the Space Shuttle program at Cape Canaveral.

This proposed project will stimulate job growth in the construction and transportation sectors. In addition to short-term construction jobs, this project will create long-term employment associated with on-going attempts to economically revitalize the historical town centers in the project corridor.

### **2.2.4 Transportation Plan Consistency**

In accordance with the Policy Element of the *2009 Florida Rail System Plan*, investments in Florida's rail system should support and spur desired economic growth. The plan establishes state policy directing investment in rail system capacity improvements to enhance interstate and intrastate movement of people and goods when public benefit can be demonstrated (FDOT, 2009). The proposed action is consistent with the Phase 1 implementation of Florida's Rail System Plan to provide intercity rail services to Florida's east coast communities. These communities are aggressively restoring their historic downtowns and have assumed Amtrak depots in their core areas to stimulate development of compact urban patterns.

The purpose of the project is consistent with recent federal transportation policy, most notably:

- the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) of 2005 (Public Law 109-59),
- the Transportation Equity Act for the 21st Century (TEA-21) of 1998 (Public Law 105-178), and the
- Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 (Public Law 102-240).

These acts encourage public transportation investment that increases national productivity and domestic and international competition while improving safety and social and environmental conditions. Specifically, these policies encourage investments that:

- link all major forms of transportation
- improve public transportation systems and services
- provide better access to seaports and airports
- enhance efficient operation of transportation facilities and service

### 3.0 METHODOLOGY

The Endangered Species Act of 1973 (ESA) (Public Law 93-205, as amended, 16 U.S.C. § 1536), provides protection for imperiled species and the ecosystems on which they depend. ESA covers plants, vertebrates, and invertebrates whose populations are at risk of becoming extinct and is administered by two federal agencies: the USFWS and NOAA (which includes the NMFS).

Pursuant to 16 U.S.C. §§ 1536(a)–(d) of the ESA, as amended, federal agencies impose specific requirements to protect federally listed endangered or threatened species of fish, wildlife, or plants (listed species) and habitat of such species that has been designated as critical habitat under Section 7(a) of the ESA. These specific requirements include the protection of all federally listed species (and their habitats) found in federally funded projects.

The Florida Fish and Wildlife Conservation Commission (FWC) maintains the state list of animals designated as endangered, threatened, or species of special concern, in accordance with Rules 68A-27.003, 68A-27.004, F.A.C., and 68A-27.005, F.A.C., respectively. The state lists of plants that are designated as endangered, threatened or commercially exploited is administered and maintained by the Florida Department of Agriculture and Consumer Services (FDACS) via Chapter 5B-40, F.A.C.

Endangered, Threatened, or Species of Special Concern are Federally and State Regulated.

- Endangered Species are any species of fish or wildlife naturally occurring in Florida, whose prospects of survival is in jeopardy due to modification or loss of habitat; overutilization for commercial, sporting, scientific, or educational purposes; disease; predation; inadequacy of regulatory mechanisms; or other natural or manmade factors affecting its continued existence.
- Threatened Species is defined as any species of fish or wildlife naturally occurring in Florida which may not be in immediate danger of extinction, but which exists in such small populations as to become endangered if it is subjected to increased stress as a result of further modification of its environment.
- Florida Species of Special Concern is a species or population which warrants special protection, recognition, or consideration because it has an inherent significant vulnerability to habitat modification, environmental alteration, human disturbance, or substantial human exploitation which, in the foreseeable future, may result in its becoming threatened.

This ESBA was prepared in compliance with Section 7 (c) of the Endangered Species Act of 1973, as amended. The following information is provided to determine the anticipated effects that the proposed construction of this project will have on those species that are federally endangered or threatened. Other wildlife and plants listed by the State of Florida are also discussed.

The potential involvement with listed species and critical habitat was determined through a review of existing data and literature, field surveys, and coordination with the FWS, NMFS, FWC, and other agencies.

Qualified personnel conducted field reconnaissance and aerial photo interpretation throughout the study area to identify areas of potential habitat for protected species. Field surveys were also conducted on waterways, natural areas, undeveloped or

abandoned sites, and wetland areas within the study area to assess the potential habitat value and usage by protected species.

Geographic Information System (GIS) datasets were used to identify known locations of listed species and potential listed species habitat occurring within or near the project corridor and field surveys were conducted in April 2010 and May 2010 to determine if the project corridor contains habitat for the previously identified listed species and to determine if any previously unidentified listed species occur in the area.

## 4.0 VEGETATIVE COMMUNITIES

The project corridor is along an existing FEC rail line. The existing FEC railroad track crosses through or close to nearly every habitat type found along Florida's east coast including FWC Biodiversity Hotspots and Priority Wetland Habitats; however, much of the area is urban in character with limited habitat potential. Except for areas of the proposed station locations, direct impacts would be limited to the existing FEC right of way.

### Duval County

The majority of rail corridor in Duval County is within low quality wildlife habitat but crosses areas of medium quality habitat in the southern portion of the county. There are no public lands adjacent to the FEC corridor or rail improvements proposed in Duval County.

### St. Johns County

The north part of the rail corridor traverses high quality habitat with the remainder of the corridor traversing mostly medium and low quality habitat. Rail modifications may occur in the vicinity of the San Sebastian River; however, no work within the waterway is expected. The remainder of the potential rail improvements in the County are in areas identified as low quality habitat with a low potential for species involvement. There are no public lands adjacent to the FEC corridor in St. Johns County.

### Flagler County

The northern and southern portions of Flagler County cross high quality habitat; however, the segments of potential mainline rail improvements are within low quality habitat with a low potential for species involvement. The FEC tracks run adjacent to the following public land in Flagler County.

- *Pellicer Creek Corridor Conservation Area* (part of the Guana Tolomato Matanzas National Estuarine Research Reserve): Much of the vegetation reflects its previous management as a pine plantation with large stands of slash and longleaf pine, along with some sand pine. In addition to these areas, natural communities found on this property consist of blackwater stream, upland mixed forest, tidal marsh, sandhill, pine flatwoods, floodplain swamp, floodplain forest,

dome swamp, depression marsh, freshwater tidal swamp, scrubby flatwoods, and scrub.

### Volusia County

Potential rail modifications are in areas of medium to high quality habitat in the vicinity of Turnbull Creek (Merritt Island National Wildlife Refuge). A moderate potential exists for species involvement associated with the shoreline habitat; however, no work within the waterway is expected. The remainder of the areas where potential rail modifications may occur is in areas of low to medium density residential land use and generally is considered to be low quality habitat with a low potential for species involvement. The FEC tracks run adjacent to the following public lands in Volusia County.

- *Doris Leeper Spruce Creek Preserve*: Spruce Creek is a natural blackwater stream that begins as a shallow cypress swamp and gives way to a narrow stream that broadens downstream into Strickland Bay. Aquatic habitats associated with the river include freshwater hardwood swamp, freshwater marsh, saltwater marsh and mangrove swamp.
- *Merritt Island National Wildlife Refuge*: Approximately one-half of the refuge consists of brackish estuaries and marshes; the remainder includes coastal dunes, scrub, pine flatwoods, and oak and palm hammocks.

### Brevard County

The available habitat along the rail corridor within Brevard County is predominantly low quality; consequently, the potential rail modification locations are in low quality habitat with a low potential for species involvement. The FEC tracks run adjacent to the following public lands in Brevard County.

- *Merritt Island National Wildlife Refuge*: Approximately one-half of the refuge consists of brackish estuaries and marshes; the remainder includes coastal dunes, scrub, pine flatwoods, and oak and palm hammocks.
- *Indian River Sanctuary*: This site is dominated by salt marsh, disturbed wetlands, and hydric hammock. An abandoned citrus grove is located on the western portion of the property.
- *Enchanted Forest Sanctuary*: This sanctuary protects a large hardwood hammock with mature live oaks, cabbage palms, saw palmettos, and grape vines. Scrub habitat, which is part of the Atlantic Coastal Ridge, occurs on the drier portion of the site.
- *Helen and Allan Cruickshank Sanctuary*: This sanctuary includes pine flatwoods, patches of oak scrub, sand pine scrub, and freshwater depression marshes.

- *Jordan Scrub Sanctuary*: Habitat types found in this sanctuary include scenic lakes, seasonal marshes, and scrubby flatwoods.
- *Valkaria Scrub Sanctuary*: Habitats consist of sand pine scrub, oak scrub, scrubby flatwoods, depression marsh, and creek system.

### Indian River County

The available habitat along the rail corridor within Indian River County is predominantly low quality with a low potential for species involvement. No rail modifications are proposed for the mainline within Indian River County. The FEC tracks run adjacent to the following public lands in the County.

- *North Sebastian Conservation Area*: This site contains xeric scrub, pine flatwoods, and freshwater wetlands.
- *Hallstrom Farmstead Conservation Area*: The site is located on the Atlantic Ridge and includes areas of sand pine scrub, maritime hammock, scrubby flatwoods, and bottomland forest.

### St. Lucie County

The majority of rail corridor within St. Lucie County traverses low quality habitat. The rail corridor is adjacent to medium quality habitat in the southern portion of the County. Potential rail improvements would be within low quality habitat with a low potential for species involvement. The FEC tracks run adjacent to the following public lands in the St. Lucie County.

- *Indio Scrub Preserve*: This conservation area contains scrub with sand live oak, myrtle oak, cabbage palm and saw palmetto.
- *D. J. Wilcox Preserve*: The site contains pine flatwoods, mangrove swamp, hammock and baygall swamp.
- *St. Lucie Village Heritage Park*: The park consists of a hammock containing very old live oak and cabbage palm with some mangrove swamp and baygall swamp.
- *Savannas Outdoor Recreation Area*: Site includes wetlands/fresh water marsh areas.
- *Savannas Preserve State Park*: The preserve contains a narrow strip of coastal ridge covered with scrub and scrubby flatwoods (former coastal dunes). There are also pine flatwoods and marsh west of the ridge.
- *Walton Scrub*: This site contains scrub and maritime hammock.

### Martin County

In the northern portion of the county, the rail corridor crosses through low quality habitat; however, the southern portion of the county provides high quality habitat adjacent to Hobe Sound National Wildlife Refuge and within the Jonathon Dickinson State Park. Rail modifications may occur along the mainline including adjacent to and within the Jonathon Dickinson State Park and in the vicinity of the St. Lucie River (Hobe Sound National Wildlife Refuge), which provides higher habitat value and species involvement; however, no work within the water is expected. The remainder of the potential rail improvements is in areas identified as low quality habitat with a low potential for species involvement. The FEC tracks run adjacent to the following public lands in the Martin County.

- *Seabranche Preserve State Park*: This site is comprised mostly of high quality sand pine scrub and baygall swamp.
- *Hobe Sound National Wildlife Refuge*: The mainland tract of this coastal refuge consists of sand pine scrub forest.
- *Jonathan Dickinson State Park*: The park includes sand pine scrub, pine flatwoods, mangrove, and river swamp on the Loxahatchee River.

### Palm Beach County

The rail corridor is within an urban environment of Palm Beach County, and thus provides low quality habitat and low potential for species involvement for rail improvements. Rail improvements may be required in the vicinity of the Jupiter River, which offers higher habitat value at the river and the potential for involvement with water-dependent species; however, no work within the water is expected. The remainder of the potential rail improvements is in areas identified as low quality habitat with a low potential for species involvement. The FEC tracks run adjacent to the following public land in Palm Beach County.

- *Lake Park Scrub Natural Area*: This site is predominantly scrub and scrubby flatwoods, with areas of former wet prairie that have dried up due to regional lowering of groundwater levels.

Track improvements are proposed within the FEC right of way within Jonathan Dickinson State Park and adjacent to Hobe Sound National Wildlife Refuge and Merritt Island National Wildlife Refuge. There are no proposed track improvements within or adjacent to other public lands. Since the proposed project would result in little change to the corridor with regard to these areas, no adverse impacts to species utilizing these areas are anticipated.

The station alternatives are predominately within developed urban areas with vegetative communities restricted to vacant lots and landscape areas. These areas,

therefore, have limited habitat availability with limited or no significant species involvement. The four exceptions to this built-out characterization are the following:

*St. Augustine - Alt 1:* The proposed station location would occur within the cleared and developed lands of the old railroad turnaround except for a small area (approximately 0.25 acres) of mixed pine-hardwood forest adjacent to a small pond that would be crossed by the siding track. Land on the west side of the rail is pinelands that transitions to salt marsh. These areas would not be directly impacted by the proposed station.

*St. Augustine - Alt. 2:* The proposed station would occur in a grassed field that transitions into saltmarsh vegetation along the San Sebastian River. To accommodate the station, the mainline railroad track would be relocated waterward and the bridge would require modification impacting tidal wetlands of the San Sebastian River.

*Titusville - Alt 3:* The station would be located in sandpine scrub habitat. The site is characterized with a canopy of sandpine, a subcanopy of scrub oaks, and a ground stratum of saw palmetto.

*Titusville - Alt 4:* The station would be located in a grassed vacant lot within a commercial area. The station would be adjacent to the coastal hardwood forest of Brevard County's Enchanted Forest Sanctuary.

## **5.0 FEDERALLY LISTED ENDANGERED AND THREATENED SPECIES**

As would be expected with a project extending through nine counties and such a variety of habitat types, a large number of protected species may occur along the project corridor. Exhibit 5-1 lists the endangered and threatened plant and animal species listed by the FWS and NMFS that could potentially be present within the project corridor. Although recently delisted, this list includes the bald eagle since it is undergoing continued monitoring and is federally protected under the Bald and Golden Eagle Protection Act.

None of the plant or animal species observed during site visits were designated Endangered or Threatened. The habitat requirements and known locations of several of the species identified in Exhibit 5-1 ensure that these species will not be found within or near the project corridor. Furthermore, a large portion of the project area is almost entirely developed or previously impacted and the amount of natural area proposed to be affected is minimal.

Exhibit 5-1  
 Federally Listed Species Potentially within Project Corridor

Common Name	Scientific Name	County									Status		Potential Occurrence	
		Duval	St. Johns	Flagler	Volusia	Brevard	Indian River	St. Lucie	Martin	Palm Beach	Federal	State		
<b>Mammal</b>														
Anastasia Island Beach Mouse	<i>Peromyscus polionotus phasma</i>		X									E	E	None
Florida panther	<i>Puma (= Felis) concolor coryi</i>										X	E	E	Low
Puma (=mountain lion)	<i>Puma (= Felis) concolor (all subsp. except coryi)</i>						X	X	X	X		T/SA	NL	Moderate
Southeastern beach mouse	<i>Peromyscus polionotus nineiventris</i>					X	X	X	X	X		T	T	Low
West Indian (Florida) manatee	<i>Trichechus manatus floridanus</i>	X	X	X	X	X	X	X	X	X		E (CH)	E	Moderate
<b>Bird</b>														
Bald Eagle	<i>Haliaeetus leucocephalus</i>	X	X	X	X	X	X	X	X	X		Delisted	NL	Moderate
Crested caracara	<i>Polyborus plancus audubonii</i>					X	X	X	X	X		T	T	Low
Everglades snail kite	<i>Rostrhamus sociabilis plumbeus</i>					X	X	X	X	X		E (CH)	E	Low
Florida scrub jay	<i>Aphelocoma coerulescens</i>			X	X	X	X	X	X	X		T	T	Moderate
Ivory-billed woodpecker	<i>Campephilus principalis</i>						X	X	X	X		E	E	None
Kirtland's warbler	<i>Dendroica kirtlandii</i>							X	X	X		E	E	Low
piping plover	<i>Charadrius melodus</i>	X	X	X	X	X	X	X	X	X		T (CH)	T	Low
red-cockaded woodpecker	<i>Picoides borealis</i>	X				X		X	X	X		E	SSC	Moderate
wood stork	<i>Mycteria americana</i>	X	X	X	X	X	X	X	X	X		E	E	Moderate
<b>Reptile</b>														
American alligator	<i>Alligator mississippiensis</i>	X	X	X	X	X	X	X	X	X		T/SA	SSC	Moderate
Atlantic salt marsh water snake	<i>Nerodia clarkii (=fasciata)taeniata</i>				X							T	T	Low
Eastern indigo snake	<i>Drymarchon corais couperi</i>	X	X	X	X	X	X	X	X	X		T	T	Moderate
green sea turtle	<i>Chelonia mydas</i>	X	X	X	X	X	X	X	X	X		E	E	Low
hawksbill sea turtle	<i>Eretmochelys imbricata</i>	X	X	X	X	X	X	X	X	X		E	E	Low
Kemp's ridley sea turtle	<i>Lepidochelys kempii</i>	X	X	X	X	X						E	E	Low
leatherback sea turtle	<i>Dermochelys coriacea</i>	X	X	X	X	X	X	X	X	X		E	E	Low
loggerhead sea turtle	<i>Caretta caretta</i>	X	X	X	X	X	X	X	X	X		T	T	Low
<b>Amphibian</b>														
flatwoods salamander	<i>Ambystoma cingulatum</i>	X										T	SSC	None
<b>Fish</b>														
shortnose sturgeon	<i>Acipenser brevirostrum</i>	X	X	X	X							E	E	Low
smalltooth sawfish	<i>Pristis pectinata</i>						X	X	X	X		E	NL	Low
<b>Plant</b>														
Beach jacquemontia	<i>Jacquemontia reclinata</i>								X	X		E	E	None
Carter's Mustard	<i>Warea carteri</i>					X						E	E	Moderate
Florida perforate cladonia	<i>Cladonia perforata</i>									X		E	E	Moderate
Four-petal pawpaw	<i>Asimina tetramera</i>								X	X		E	E	Moderate
Fragrant prickly-apple	<i>Cereus eriophorus var. fragrans</i>							X				E	E	Moderate
Johnson's seagrass	<i>Halophila johnsonii</i>						X	X	X	X		T (CH)	NL	Low
Lakela's mint	<i>Dicerandra immaculata</i>						X	X	X			E	E	None
Okeechobee gourd	<i>Cucurbita okeechobeensis ssp.okeechobeensis</i>				X					X		E	E	None
Rugel's Pawpaw	<i>Deeringothamus rugelii</i>				X							E	E	Low
Tiny polygala	<i>Polygala smallii</i>							X	X	X		E	E	Moderate

**Table Notes:**

- E – Endangered
- T – Threatened
- T/SA - Threatened by Similarity of Appearance
- SSC – Species of Special Concern
- NL - Not Listed
- CH - Critical Habitat (note: Snail kite - Indian River, St. Lucie and Palm Beach Counties only; Piping plover - Martin County only)
- None - Project is outside of preferred habitat or range
- "Federal Status" derived from United States Fish and Wildlife Service
- "State Status" derived from Florida Fish and Wildlife Conservation Commission and Florida Department of Agriculture databases

The following discusses only species that could potentially be found within the project area and may be impacted by the project.

## 5.1 Birds

### 5.1.1 Bald Eagle (*Haliaeetus leucocephalus*)

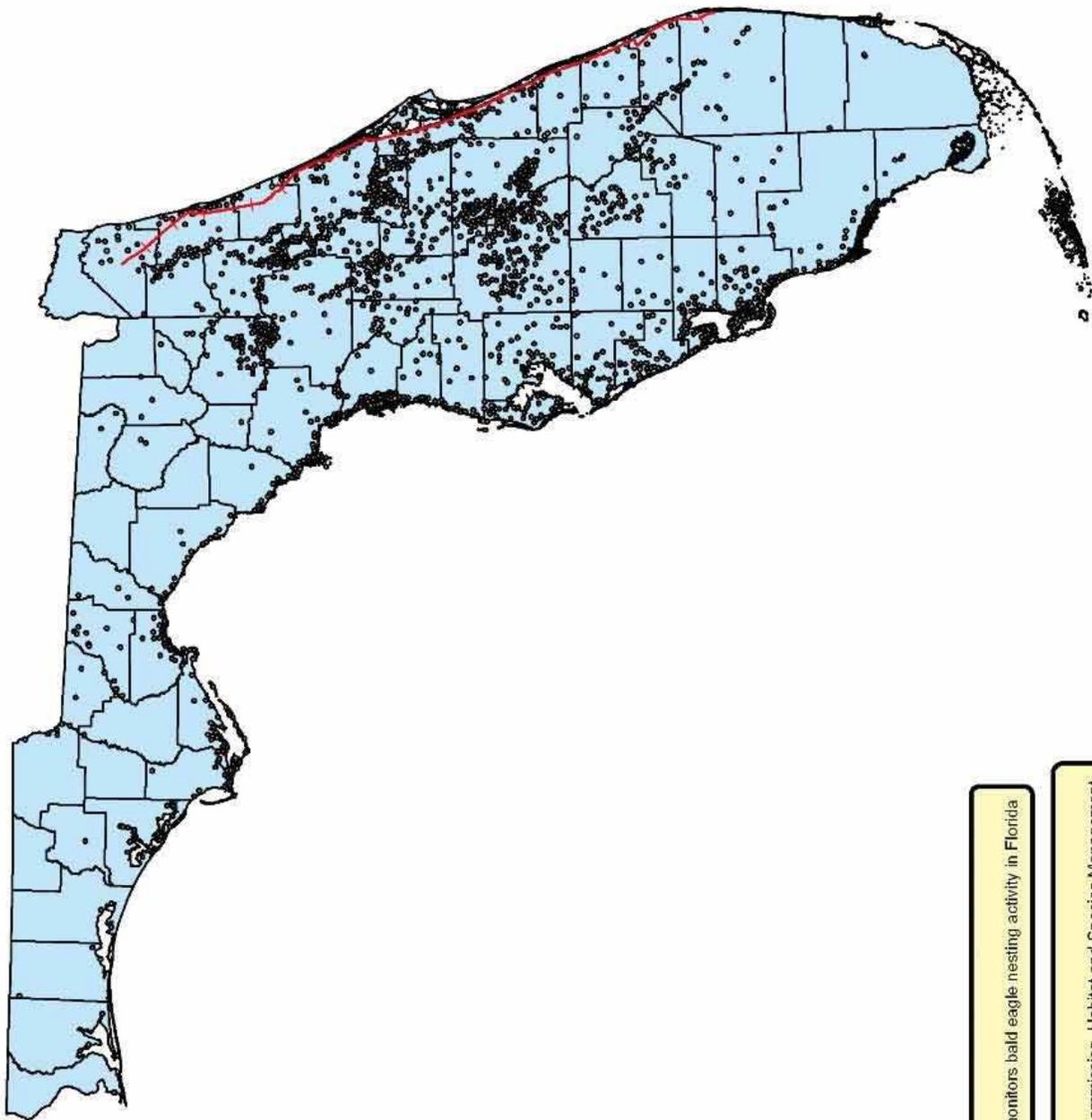
Bald eagles were removed from the endangered species list in June 2007 because their populations recovered sufficiently. However, as required by the Endangered Species Act populations are monitored for a minimum of five years and the protections under the Bald and Golden Eagle Protection Act (Eagle Act) continue to apply.

The bald eagle is Florida's largest raptor and is easily recognized by its distinctive white head and chocolate brown wings and body. Juveniles are dark with variable amounts of light splotching on their body, wings, and tail; and its head and bill are dark. Its range is extremely large, covering much of the United States from Florida to Alaska. Bald eagles are opportunistic birds, feeding on carrion or live prey, sitting and waiting or going in active pursuit of a meal, depending on abundance and type of prey. The bald eagle is most commonly found close to coastal areas, bays, rivers, lakes, or other bodies of water that provide abundant food sources including fish, waterfowl, and wading birds.

Until the ban of DDT in 1972, the species had been in decline, reaching its lowest point with only 120 active Florida nests in 1973. Currently in Florida there are between 1,000-1,200 mated pairs that nest every year. Bald eagles usually nests in tall trees (mostly live pines) which provide clear views of the surrounding area. Although the majority of the corridor has few trees that are capable of supporting a bald eagle nest, bald eagles have been recorded in Pellicer Creek Corridor Conservation Area, Merritt Island National Wildlife Refuge, and Jordan Scrub Sanctuary along the project corridor.

Bald eagle nests are monitored annually by the FWC. Five nest sites have been identified within 700-ft of the FEC rail and proposed stations: Nest VO097 south of Strickland Bay, Nest VO121 on Lake Ave. in New Smyrna Beach, Nest VO040 at US 1 crossing north of Turnbull Creek (inactive since 1993), Nest VO103 within the golf course at Wilder Blvd/Country Club Road (Daytona Beach), and Nest BE061 north of Enchanted Forest Sanctuary in Titusville. Exhibit 5-2 shows documented locations of bald eagle nests.

There is a moderate potential for bald eagles to occur within the project corridor. However, since project construction and operation will result in little change to the corridor with regard to potential bald eagle habitat, there are no anticipated adverse impacts on this species or its preferred habitat. Should any additional eagle nests be identified, additional coordination would occur with the FWS Office of Migratory Birds.



**NOTE:**  
This data set contains the nest locations which monitors bald eagle nesting activity in Florida

**SOURCE:**  
NAME : Florida Fish and Wildlife Conservation Commission, Habitat and Species Management  
PUBLICATION DATE: 04-01-2007



## Legend Bald Eagle Nest Locations

- Bald Eagle Nest location
- +— Amtrak FEC Mainline
- County Boundry

## ENDANGERED SPECIES BIO ASSESSMENT



### **5.1.2 Crested Caracara (*Polyborus plancus audubonii*)**

The crested caracara is listed as Threatened by both the FWS and the FWC. The crested caracara is a large, distinctive raptor with a large head, black cap and crest. The caracara is mainly black-brown with a white throat and neck with bare, red facial skin. Juveniles have pale edging on the brown feathers of their upper side and are streaked below.

The crested caracara inhabits open country, including dry prairie and pasture lands with cabbage palm, cabbage palm/live oak hammocks, and shallow ponds and sloughs. Its preferred nest trees are cabbage palms, followed by live oaks. Based on the most recent data, the caracara is most abundant in south central Florida. The crested caracara is often seen with vultures because of its scavenging nature.

The central portion of the project corridor lies within crested caracara consultation area. However, the crested caracara has a low potential of occurrence within the project corridor. Furthermore, since project construction and operation will result in little change to the corridor with regard to potential crested caracara habitat, there are no anticipated adverse impacts on this species or its preferred habitat.

### **5.1.3 Everglades Snail Kite (*Rostrhamus sociabilis plumbeus*)**

The Everglades snail kite is listed as Endangered by the FWS and FWC. The snail kite is a medium-sized raptor. The adult male is dark slate gray to black; its tail is white with a broad, dark band and pale terminal band; and it has a long, hooked bill. The adult female is brown with streaking on head, throat, and underparts; and its soft part colors are like that of the male. Juveniles and subadults are similar to adult females.

This primarily South and Central American species was historically found throughout most of Florida but its range has dramatically declined due to habitat loss. The snail kite inhabits large open freshwater marshes and lakes with shallow water, less than four feet deep, and a low density of emergent vegetation. It is dependent upon apple snails (*Pomacea paludosa*) which are caught on the water surface. Snail kite nests are usually located over water in a low tree or shrub (commonly willow, wax myrtle, pond apple, or buttonbush, but also in non-woody vegetation like cattail or sawgrass). Freshwater wetlands that formerly supported large numbers of apple snails have been drained, filled, or rerouted to accommodate development and agriculture.

Currently, the snail kite is restricted to St. Johns River headwaters; Kissimmee Valley; Lake Okeechobee; Loxahatchee National Wildlife Refuge; Holey Land Wildlife Management Area; Water Conservation Areas 2A, 2B, 3A, 3B; and parts of Everglades National Park and Big Cypress National Preserve. Observation of a snail kite was also previously reported in the Savannas Outdoor Recreation Area. The western portions of Palm Beach, Broward and Miami-Dade Counties as well as two small areas in western Indian River and St. Lucie Counties have been designated by the FWS as Critical Habitat for the snail kite. The FEC Rail corridor lies outside of these designated areas.

Portions of the project corridor lie within snail kite consultation area. However, with limited suitable habitat and in the absence of its exclusive food source, the snail kite has a low potential of occurrence within the project corridor. Furthermore, since project construction and operation will result in little change to the corridor with regard to potential snail kites, there are no anticipated adverse impacts on this species or its critical habitat.

#### **5.1.4 Florida Scrub Jay (*Aphelocoma coerulescens*)**

The Florida scrub jay is listed as Threatened by the FWS and FWC. Scrub jays are similar in size and shape to the familiar blue jay (*Cyanocitta cristata*); however, they have a crestless head and their nape, wings, and tail are pale blue while the back and belly are pale gray. Juvenile scrub jays have fluffy brown heads.

Scrub jays inhabit fire-dominated, low-growing, oak scrub habitat found on well-drained sandy soils. They may also persist in areas with sparser oaks or scrub areas that are overgrown, but at much lower densities. Florida scrub jays are restricted to peninsular Florida. A 1992 range-wide estimate gave an overall population of approximately 10,000 birds with the largest populations found on federal lands (Merritt Island National Wildlife Refuge and Ocala National Forest). Scrub jay habitat can also be found in Helen and Allan Cruickshank Sanctuary, Jordan Scrub Sanctuary, Valkaria Scrub Sanctuary, North Sebastian Conservation Area, Seabrook Preserve State Park, Hobe Sound National Wildlife Refuge, and Jonathan Dickinson State Park in the vicinity of the existing rail line. In addition, Type 2 scrub jay habitat has been identified at Alternative #3 in Titusville (Space Center Executive Airport). This station alternative would be located in sandpine scrub habitat which is characterized with a canopy of sandpine (*Pinus clausa*), a subcanopy of scrub oaks (*Quercus* spp), and a ground stratum of saw palmetto (*Serenoa repens*). There are also Florida scrub jay colonies within two miles of this location. This site has not been identified as the preferred station alternative.

The majority of the project corridor lies within the Florida Scrub Jay Consultation Area and scrub jays have a moderate potential to occur within the corridor. However, since project construction and operation will result in little change to the corridor with regard to scrub jay habitat, there are no anticipated adverse impacts on this species or its habitat.

#### **5.1.5 Kirtland's Warbler (*Dendroica kirtlandii*)**

Kirtland's warbler is classified as Endangered by both the FWS and FWC. The species breeding range is very small, confined to Jack Pine forests in only 12 counties of Michigan (Rodgers, Kale and Smith 1996). In Florida, the species is a transient with its presence limited to several weeks in the fall and spring concurrent with the species migration to and from its wintering grounds in the Bahamas.

Migration routes are not well known for the species. Its secretive behavior and habitat preference would seem to preclude its occurrence within the study corridor.

### **5.1.6 Piping Plover (*Charadrius melodus*)**

Piping plovers are listed as Threatened by both the FWS and FWC. They are a small plover with a short, stout, black bill, yellow to greenish-olive legs, and very pale upperparts. They are transient in Florida and therefore are usually encountered in winter plumage.

Piping plovers are found on open, sandy beaches and on tidal mudflats and sandflats along both coasts. Although, they may winter on both the Gulf and Atlantic coasts, they are much more common on Gulf coast with approximately 88 percent of birds being recorded on the Gulf coast. Birds found on the Atlantic coast number around 20 - 30 birds and are scattered from Duval County south to Brevard, St. Lucie, and Miami-Dade counties. They have been known to winter in the Merritt Island National Wildlife Refuge. A portion of coastline in Martin County is designated as Critical Habitat for the wintering population of piping plovers. This habitat is outside of the project corridor. They are no longer believed to overwinter in Broward, Indian River, Nassau, or Palm Beach counties.

The coastline area along the project corridor is within the Piping Plover Consultation Area; however, with limited project involvement with coastal habitats, piping plovers have a low potential to occur within the corridor. Since project construction and operation will result in little change to the corridor with regard to piping plover habitat, there are no anticipated adverse impacts on this species or its critical habitat.

### **5.1.7 Red-cockaded Woodpecker (*Picoides borealis*)**

The red-cockaded woodpecker is listed as Endangered by the FWS and as a Species of Special Concern by the FWC. This small woodpecker can be distinguished by its barred, black and white back and wings, black cap and nape, and white cheek patches on each side of the head. Red streaks or “cockades” on either side of head of adult males are rarely visible. Juvenile males can be identified by a small, circular patch of red on top of the head that is visible until early fall.

Red-cockaded woodpeckers inhabit open, mature pine woodlands that have a diversity of grass, forb, and shrub species. They generally occupy longleaf pine flatwoods in north and central Florida, mixed longleaf pine and slash pine in south-central Florida, and slash pine in south Florida which is outside the range of longleaf pine. Red-cockaded woodpeckers forage in several forested habitat types that include pines of various ages although they prefer more mature pines.

In Florida, red-cockaded woodpeckers occur from the western panhandle through the peninsula to south Florida. Distribution of the species is tied to the remaining areas of old-growth pine forests. Portions of the project corridor are within the red-cockaded woodpecker’s consultation area and they have been previously identified at the Doris Leeper Spruce Creek Preserve.

Red-cockaded woodpeckers have a moderate potential to occur within the corridor; however, since project construction and operation will result in little change to the corridor with regard to red-cockaded woodpecker habitat, there are no anticipated adverse impacts on this species or its habitat.

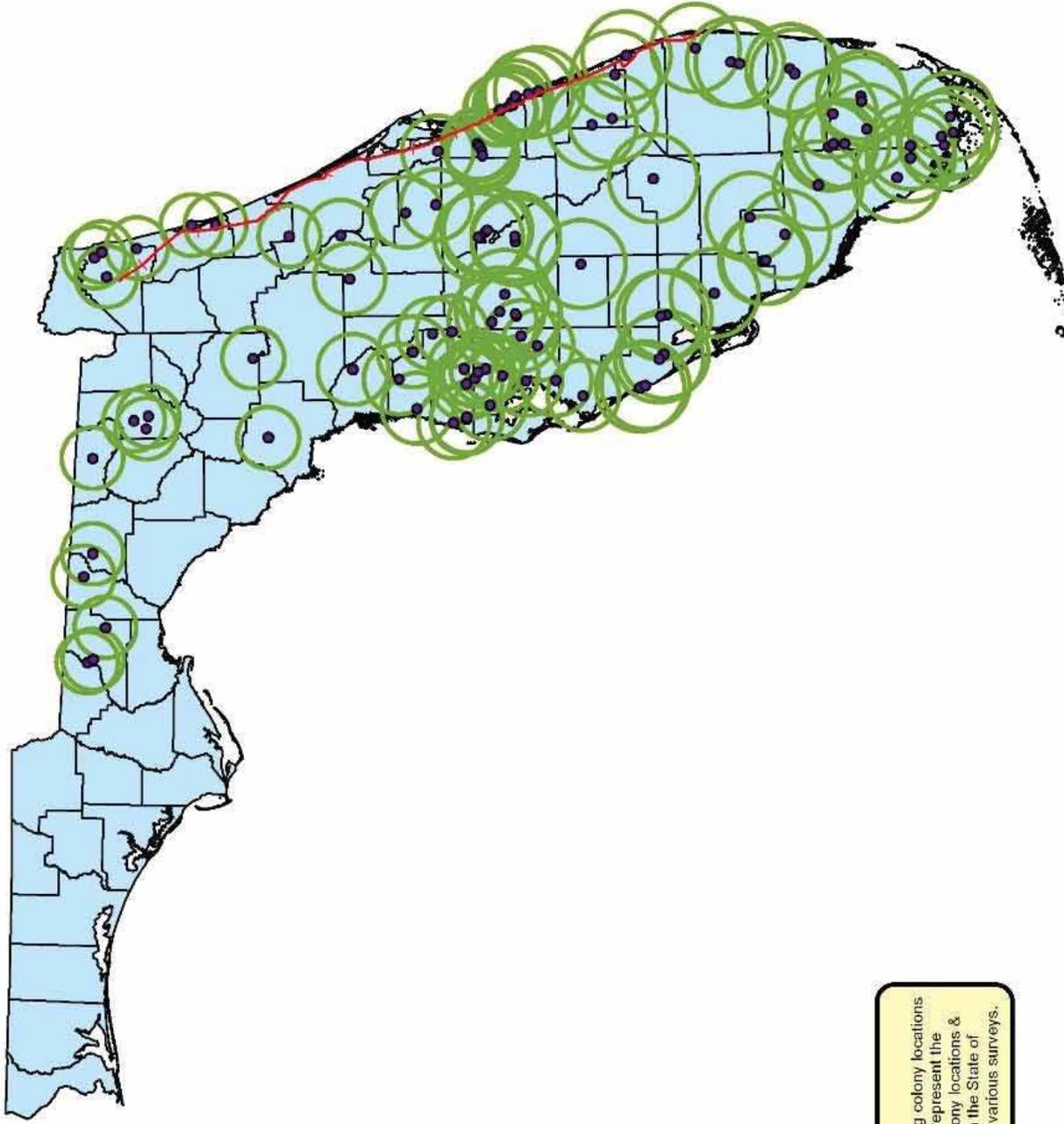
### **5.1.8 Wood Stork (*Mycteria americana*)**

Wood storks are a gregarious species which nests in colonies (rookeries), and roosts and feeds in flocks, often in association with other species of long-legged water birds. The wood stork population is listed as Endangered by the FWS and FWC. The wood stork is a large, white wading bird with black in its wings and a short black tail. Its black flight feathers contrast with white along the length of its wings. Adults have bare, scaly, dark-gray heads and necks, with long, heavy, decurved bills. The head and neck of immature wood storks have grayish brown feathering, and their bills are yellowish.

Wood storks use freshwater and estuarine wetlands as feeding, nesting, and roosting site. The wood stork nests colonially in a variety of inundated forested wetlands, including cypress strands and domes, mixed hardwood swamps, sloughs, and mangroves. The wood stork forages mainly in shallow freshwater marshes, swamps, lagoons, ponds, tidal creeks, flooded pastures and ditches, where they are attracted to falling water levels that concentrate food sources (mainly fish).

Although storks are not habitat specialists, their needs are exacting enough, and available habitat is limited enough, so that nesting success and the size of populations are closely regulated by year-to-year differences in the quality and quantity of suitable habitat. Storks are especially sensitive to environmental conditions at feeding sites; thus, birds may fly relatively long distances either daily or between regions annually, seeking adequate food resources. All available evidence suggests that regional declines in wood stork numbers have been largely due to the loss or degradation of essential wetland habitat seasonally important to the species.

The FWS South Florida Ecological Services Office has established Standard Local Operating Procedures for Endangered Species (SLOPES) for wood storks to provide a tool to assist in determining if an action could adversely affect wood storks. For the purpose of the wood stork SLOPES, the colony boundary includes all nests and a 325 foot buffer surrounding the nests. The core foraging area (CFA) surrounds the colony boundary and is a 13-mile zone in north Florida, 15-mile zone in central Florida, and an 18.6-mile zone in south Florida. The guidelines recommend restrictions in each of the zones that correspond to nesting and non-nesting season cycles. Exhibit 5-3 shows the location of the CFA for each wood stork colony identified on the FWC Waterbird Colony Locator.



**NOTE:**  
 This dataset contains Florida Wood Stork nesting colony locations & Florida Wood Stork core foraging areas. This represents the graphic representation of wood stork nesting colony locations & wood stork nesting colony core foraging areas in the State of Florida active from 1997 - 2006 as described by various surveys.

**SOURCE:**  
 NAME : U.S. Fish and Wildlife Service  
 PUBLICATION DATE: 05-05-2010



# Wood Stork Core Foraging Areas

- Legend**
- Wood Stork Core Foraging Areas
  - County Boundry
  - Amtrak FEC Mainline
  - Wood Stork nesting colony locations

## ENDANGERED SPECIES BIO ASSESSMENT



The project corridor for the mainline passes through the Core Foraging Areas (CFA) of approximately 22 active nesting colonies of the wood stork. In addition the proposed railroad stations in St. Augustine, Titusville, Cocoa, Melbourne, Vero Beach, Ft. Pierce and Stuart are all within the CFAs of wood stork colonies. However, only Alternatives 1 and 2 in St. Augustine would have a potential to impact potential wood stork CFA. Any losses of wetlands within these CFAs due to proposed rail improvements and station construction would require mitigation for the potential loss of foraging habitat for the wood stork within this same CFA.

Wood storks are also frequently observed on the edges of roadway stormwater ponds and swales. They likely forage in the swales adjacent to the rail and roads along the project corridor especially in winter, but these areas provide sub-optimal habitat for wood storks due to high noise levels and the accumulation of run-off contaminants in the stormwater ponds and swales.

Occurrence of this species within the project corridor would be moderate and transitory in nature. Though wood storks might infrequently use the waterways adjacent to the FEC railway as foraging grounds, the project area contains no critical habitat and the project will not alter foraging areas, thus no adverse impacts to this species are anticipated.

During the design and permitting phase of the proposed project, a wildlife survey will be conducted to determine if Technical Special Provisions (TSPs) need to be incorporated into the construction plans. If any wood storks are found routinely using any of the areas proposed for construction, the TSPs will be incorporated into the contractor's bid documents. Therefore, the proposed project is not expected to adversely affect the wood stork or its preferred habitat.

## 5.2 Mammals

### 5.2.1 Florida Panther (*Felis concolor coryi*)

The Florida panther is listed as Endangered by both the FWS and the FWC. The Florida panther is a large (70-150 lbs.) cat with a long tail. Its fur is dark buff to tawny above and light buff to white below. The muzzle and tip of its tail are black. Its head is broad, and ears are round. Its typical track shows four clawless toe pads around a three-lobed heel pad. Pumas (*Felis concolor*), other *Felis concolor* subspecies, and bobcats (*Lynx rufus*) occasionally escape captivity or have been released and can be mistaken for Florida panthers; the defining characteristics listed above may be unreliable in distinguishing these close relatives.

The Florida panther requires extensive blocks of mostly forested communities. Large wetlands that are generally inaccessible to humans are important for diurnal refuge. It is a year round resident with Collier, Glades, and Lee Counties being the stronghold for the species; but Miami-Dade and Monroe Counties are also important. Dispersing individuals may range well north in the peninsula searching for new territories. There are 90 - 100 individuals in the current Florida panther population.

The potential occurrence of Florida panthers is low due to the lack of preferred habitat within the project corridor. Therefore, the proposed project is not expected to adversely affect the Florida panther or its preferred habitat.

### **5.2.2 Southeastern Beach Mouse (*Peromyscus polionotus nineiventris*)**

Southeastern beach mice are listed as Threatened by both the FWS and FWC. They are a small, light-colored mouse that averages 5.3 inches for an adult male and 5.5 inches for an adult female. Hairs of the dorsal fur are buff-tipped with gray bases while hairs on the forehead and snout are buff to the base. Flanks, feet, cheeks, and underside of the southeastern beach mouse are white.

The southeastern beach mouse preferred habitat includes primary, secondary, and occasionally tertiary sand dunes with a moderate cover of grasses and forbs, including sea oats (*Uniola paniculata*), bitter panicum (*Panicum amarum*), and beach dropseed (*Sporobolus virginicus*). The southeastern field mice are now known primarily from a few isolated locations from southern Volusia County to Martin County. Although they may be found inside the Merritt Island National Wildlife Refuge, the project corridor lies outside of the southeastern beach mouse consultation area.

The potential occurrence of southeastern field mice is low due to the lack of preferred habitat within the project corridor. Therefore, the proposed project is not expected to adversely affect the southeastern field mice or its preferred habitat.

### **5.2.3 West Indian Manatee (*Trichechus manatus latirostris*)**

The West Indian manatee is classified as Endangered by the FWS and FWC, and receives further protection under the U.S. Marine Mammal Protection Act of 1972 and the Manatee Sanctuary Act of 1978. The manatee population was very near extinction during the 1950s and 60s but with increased protection the species has rebounded well. Accurate population counts remain problematic because of a lack of appropriate census methods. Performing annual comparisons of manatee numbers at wintering holes where they congregate is efficient and informative, but the seasonal densities at these sites which facilitate counting, make extrapolation to statewide population estimates impractical.

The manatee is a large (180 - 400 lbs.), gray, nearly hairless, walrus-like aquatic mammal. It has a broad, rounded, and flattened tail, its front limbs are flipper-like with three nails and its hind limbs are absent. Manatees have a broad head that is undifferentiated from the body with stiff bristles on the upper deeply cleft lip.

The range of the manatee is a function of water temperature. The manatee is restricted to Florida's coastal, estuarine, and riverine waters during winter months, but during the summer months its range often includes neighboring states. Habitat requirements include warm water, freshwater sources, plentiful aquatic vegetation for foraging and

waterways of sufficient depth and width to allow passage. Sheltered coves are important for feeding, resting, and calving. Manatees are frequently found in large congregations at warm water discharge points such as nuclear cooling facilities or natural springs where warm fresh water is abundant and conditions are favorable for vegetative blooms.

The greatest threats to manatee populations are boat propellers and periods of unseasonably cold weather. Gathering of manatees around warm water discharge points makes the species more susceptible to single catastrophic events, but more importantly benefits the species by providing a cold weather refugia.

Chapter 68C-22 of the Florida Administrative Code establishes Manatee Protection Zones for the Counties. Most of the canals and waterways within the study area are accessible to manatees. Waterways associated with the St John's River, Banana River, Indian River, and Loxahatchee River are designated as Critical Habitat for the manatee. There is a moderate potential for manatees to occur within the project corridor; however, construction and operation of the project would not be expected to have any permanent impact on the manatee or its habitat since no construction is anticipated within or over waterways. In addition, the Standard Manatee Construction Precautions shall be utilized to ensure protection of the West Indian Manatee during construction of the project. Therefore, the proposed project is not expected to adversely affect the West Indian manatee or its Critical Habitat.

## 5.3 Reptiles

### 5.3.1 *American Alligator (Alligator mississippiensis)*

The American alligator is classified as Threatened due to Similarity of Appearance (to the endangered American crocodile) by the FWS and as a Species of Special Concern by the FWC. Though once listed as Endangered, the population has rebounded to the point that it is widespread and often encroaches into urban waterways. The alligator is a large, mostly black crocodylian with a broadly rounded snout. Its young have yellow crossbands on back, tail, and sides. At all ages, its throat and belly are white to creamy yellow. Its head is smooth in front of the eyes and there are no prominently visible teeth in the lower jaw when the mouth is closed. Adults are typically 6-15 feet in length and hatchlings are approximately 9 inches long.

The American alligator inhabits most permanent bodies of fresh water statewide, including marshes, swamps, lakes, and rivers. Therefore it is likely that alligators are present in canals and lakes within the study area; however there will be no net loss of available American alligator habitat. Adverse effects to alligators as a result of this project are unexpected as the species is highly mobile and wary of human activity. Once construction is completed, it is likely that alligators would return to the area.

### **5.3.2 Atlantic Salt Marsh Water Snake (*Nerodia clarkii* (=fasciata) taeniata)**

The Atlantic salt marsh water snake is listed as Threatened by the FWS and FWC. This snake is a small to medium-sized (maximum 2 ft.) water snake marked by a pattern of dark brown and light stripes anteriorly but dark blotches on a pale olive ground color over much of the rest of the body.

The Atlantic salt marsh water snake is an estuarine species living in habitats such as coastal salt marshes, mangrove swamps, tidal creeks, pools, and ditches. It is restricted to coastal Volusia County; and intergrades with mangrove salt marsh snake (*N. c. compressicauda*) in Brevard and Indian River counties. It has been reported in Merritt Island National Wildlife Refuge and Doris Leeper Spruce Creek Preserve.

Due to its limited habitat type, Atlantic salt marsh water snakes would have a low potential for occurring within the project corridor. The proposed project is not expected to adversely affect the Atlantic salt marsh water snake or its preferred habitat.

### **5.3.3 Eastern Indigo Snake (*Drymarchon corais couperi*)**

The eastern indigo snake is listed as Threatened by the FWS and FWC. The eastern indigo snake is the largest of all North American snakes reaching lengths of up to 8 feet and is easily recognized by its size and distinctive iridescent black coloration. It is black ventrally, but its chin, throat, and sides of its head may be reddish or (rarely) white. Indigo snake young are similar to adults though often more reddish anteriorly, and are approximately 17-24 inches long at hatching. When encountered, the eastern indigo snake often hisses, flattens its neck vertically (from side to side), and vibrates its tail, but rarely bites.

Today the range of the indigo snake covers all of Florida and southern Georgia, though historically its range was much larger. Indigo snakes are found in a wide variety of habitats including mangrove swamps, wetland prairies, xeric pinelands, and scrub. Though generalists in habitat type, suitable habitat must also contain some sort of burrow or underground shelter that the snake uses during winter months.

Indigo snakes are diurnal and wide-ranging, requiring large tracts of undisturbed land. This combination makes them particularly rare because there is so little remaining unfragmented land in Florida, and where they are present they are often readily visible to poachers because of their size and diurnal habit.

Along the project corridor, there are various habitats capable of supporting indigo snakes and they have been reported in Merritt Island National Wildlife Refuge, Enchanted Forest Sanctuary, Seabranche Preserve State Park, Hobe Sound National Wildlife Refuge, and Jonathan Dickinson State Park. The potential occurrence of the indigo snake is moderate within the project corridor; however, during construction activities snakes would likely migrate away from the actual work area into other suitable areas that occur in the general project area. Any construction activities would

occur within existing FEC right of way and special precautions will be employed during project construction; therefore, no adverse impacts on the Eastern indigo snake or its habitat are expected to occur from the project.

### **5.3.4 Sea Turtles**

Five species of sea turtles are located within the vicinity of the proposed project: green sea turtle (*Chelonia mydas*); hawksbill sea turtle (*Eretmochelys imbricate*); Kemp's Ridley sea turtle (*Lepidochelys kempii*); leatherback sea turtle (*Dermochelys coriacea*); and loggerhead sea turtle (*Caretta caretta*). All but the loggerhead, which is listed as Threatened, are listed as Endangered by the FWS and FWC.

Sea turtles inhabit the marine coastal and oceanic waters off the eastern coast of Florida and nest on the coastal sand beaches often near the dune lines to avoid tidal inundation. Sea turtles can be found year round with nesting occurring from the spring to fall and hatchlings emerging from summer to fall.

Hawksbill turtles are found primarily in the southern half of Florida, primarily in the Florida Keys and reefs along the southeastern peninsular coast. They nest infrequently (1 - 4 per year) but have been recorded from Volusia County to the Marquesas.

Leatherbacks are found along the entire coast of Florida, with nesting known from every Atlantic coastal county and in the panhandle. Approximately half of their Florida nests are in Palm Beach County.

Green sea turtles, loggerheads, and Kemp's Ridley are also found in the coastal waters statewide. Green sea turtles nests mostly along the Atlantic coast, especially from Volusia to Miami-Dade County, with a few nests in the Florida Keys and on the southwestern and western panhandle coasts. Areas known to be especially important to young green sea turtles include the Gulf coast of Citrus and Levy counties, Indian River Lagoon, shallow hard bottoms along the southeastern coast, and Florida Bay. Nesting of the loggerheads occur along the entire Atlantic coast, in the Keys, and along the Gulf coast from Pinellas County south and Franklin County west, with the greatest numbers from Brevard to Broward counties. Kemp's Ridley sea turtles apparently did not historically nest in Florida, but eight nests have been recorded since 1989, possibly a result of conservation efforts. Waters along the entire Gulf coast are important for growth of young Kemp's Ridley sea turtles.

Since the FEC rail corridor travels over waterways connected to the Intracoastal waterway and Atlantic ocean, there is a low potential for sea turtles to occur within the project corridor; however, construction and operation of the project would not be expected to have any permanent impact on sea turtles or their habitat since no construction is anticipated within or over the waterways.

## 5.4 Fish

### 5.4.1 *Shortnose Sturgeon (Acipenser brevirostrum)*

The shortnose sturgeon is listed as endangered by the FWS and FWC. The shortnose sturgeon is a relatively small sturgeon, generally less than 3 feet long, with a wide mouth, darkly colored viscera, bluntly V-shaped, short snout, and prominent, bony scutes (enlarged scales). Its general body color is brown to black dorsally, fading to yellow on the sides and white ventrally.

Most of the shortnose sturgeon life cycle is spent in lower portions of large rivers and in brackish habitats along the Atlantic coast. During spawning, however, the shortnose sturgeon may migrate long distances upstream if unimpeded by dams. Excursions into full-strength salt water seldom occur. Shortnose sturgeons are thought to be restricted to the lower St. Johns River basin from the mouth upstream to Lake George and Lake Crescent. The breeding habitat of this species in the St. Johns River basin was eliminated by the construction of the Rodman Dam. Because shortnose sturgeon do not undergo coastal migrations, the St. Johns River population is likely to become extinct in the near future, if not already.

The shortnose sturgeon has a low potential of occurrence within the project corridor due to its limited range. There are no proposed construction activities over the St. Johns River and if a shortnose sturgeon is encountered during construction, they will likely move from the area of disturbance and not return until after construction has been completed. Therefore, the proposed project is not expected to adversely affect the shortnose sturgeon or its preferred habitat.

### 5.4.2 *Smalltooth Sawfish (Pristis pectinata)*

The smalltooth sawfish is listed as Endangered by the FWS and is not listed by the FWC. The smalltooth sawfish is one of two species of sawfish that inhabit US waters. Smalltooth sawfish commonly reach 18 feet in length and may grow to 25 feet. Little is known about the life history of these animals, but they may live up to 25-30 years and mature after about 10 years. Like many elasmobranchs, smalltooth sawfish are ovoviviparous, meaning the mother holds the eggs inside of her until the young are ready to be born, usually in litters of 15 to 20 pups.

Sawfish species inhabit shallow coastal waters of tropical seas and estuaries throughout the world. They are usually found in shallow waters very close to shore over muddy and sandy bottoms. They are often found in sheltered bays, on shallow banks, and in estuaries or river mouths.

The U.S. population of smalltooth sawfish is found only in the Atlantic Ocean. Historically, the US population was common throughout the Gulf of Mexico from Texas to Florida, and along the east coast from Florida to Cape Hatteras. The current range of this species is restricted to peninsular Florida, and smalltooth sawfish are relatively common only in the Everglades region at the southern tip of the state. Sawfish are

extremely vulnerable to overexploitation because of their propensity for entanglement in nets, their restricted habitat, and low rate of population growth. The decline in smalltooth sawfish abundance has been caused primarily by bycatch in various fisheries, likely compounded by habitat degradation.

The smalltooth sawfish has a low potential of occurrence within the project corridor due to its limited range and limited construction activities over waterways. If a smalltooth sawfish is encountered during construction, they will likely move from the area of disturbance and not return until after construction has been completed. Therefore, the proposed project is not expected to adversely affect the smalltooth sawfish or its preferred habitat.

## 5.5 Plants

### 5.5.1 *Carter's Mustard (Warea carteri)*

Carter's mustard is an annual herb, growing up to 40 inches tall from a taproot. It is listed as Endangered by both the FWS and FWC. Stems are erect, branching from mid-stem to form a rounded crown. Leaves are alternate, 2-5 cm long. Flowers are 4-petaled, white.

Carter's mustard is endemic to scrub habitats in Florida. Its habitat is sandy clearings in sand scrub and sandhills with a scattered overstory of sand; longleaf or slash pine and scrub oaks.

Currently, the only known populations of Carter's mustard occur in scrub habitats of the Lake Wales Ridge in Lake, Polk and Highland Counties. It has historically been collected from Miami-Dade and Brevard Counties as well; however, it has been extirpated from Miami-Dade County and is possibly extirpated from Brevard County. Although the FWS considers it likely extirpated from Brevard County, isolated populations may still exist. Present distributional records may be somewhat incomplete, however, as the plant is relatively inconspicuous except when flowering.

Carter's mustard thrives in post disturbance niches, and reported population size may increase as much as three orders of magnitude following a fire, but decrease in the second year following a fire. This pattern is indicative that a potentially large seed bank may be present in soils. Seeds stored under dark, dry conditions remained viable for at least two years under lab conditions.

Due to limited habitat range, there is a low potential of this species to occur within the project corridor. Therefore, the proposed project is not expected to adversely affect Carter's mustard or its preferred habitat.

### 5.5.2 *Florida Perforate cladonia (Cladonia perforata)*

Florida perforate cladonia is listed as Endangered by FWS and FWC. This conspicuous lichen forms large dense clusters up to 2.5 inches tall. The branches of Cladonia lichens

arise from spore-producing structures and not from the vegetative body of the fungus as is the case with other branched lichens. The pale yellowish-gray, more or less glossy-surfaced podetia grow in intricate tufts. It is often loosely attached to sandy substrate and dispersing by wind-blown fragments.

This lichen prefers sandy openings in stabilized sand dunes with Florida scrub vegetation. It occurs on a barrier island in the Florida panhandle (Okaloosa County) and in scrub vegetation in central Florida south of Lake Placid (Highlands County), at Jonathan Dickinson State Park near the southeastern coast in Martin County, and (subject to confirmation), a nearby site in northern Palm Beach County. There is a reasonable possibility that the lichen will be found at widely scattered localities elsewhere in Florida. However, extensive searches have shown that this is an extremely rare lichen.

Since Florida perforate cladonia may be found in Jonathan Dickinson State park, there is a moderate potential for this species to occur within the project corridor. During the design and permitting phase of the proposed project, a plant survey will be conducted of any areas that may be impacted to determine if TSPs need to be incorporated into the construction plans to protect this species. If Florida perforate cladonia is found within the project footprint, TSPs will be incorporated into the contractor's bid documents. Therefore, the proposed project is not expected to adversely affect Florida perforate cladonia or its preferred habitat.

### **5.5.3 Four-Petal pawpaw (*Asimina tetramera*)**

Four-Petal pawpaw is an annual herb, growing 1.3 – 5 feet tall from a taproot, which is listed as Endangered by FWS and FWC. Its stems are erect, reddish-brown to grey-brown, and branching from mid-stem to form a rounded crown. Its leaves are alternate, 0.8 - 2 inches long and its white flowers are 4-petaled.

Four-Petal pawpaw is endemic to South Florida in Palm Beach and Martin counties and prefers sandy clearings in sand scrub and sandhills; scattered overstory of sand; longleaf or slash pine and scrub oaks. The range of the four-petal pawpaw is limited to locations around Jensen Beach, Savannahs Preserves State Reserve, Hobe Sound National Wildlife Refuge, Jonathan Dickinson State Park, and in Palm Beach County from the Martin County line south to northern sections of Palm Beach Gardens. Populations not growing in protected park areas are in rapid decline due to coastal development, fire suppression, and human disturbance.

Four-petal pawpaw is an understory plant that is easily outcompeted by species, primarily evergreen oaks and pines, that overgrow and shade it. It relies on infrequent fires approximately every 20 to 80 years to periodically trim the canopy and allow it to regenerate. New growth regenerates quickly in the absence of canopy plants, but slows once the canopy begins to mature.

Since populations exist in lands adjacent to the corridor, there is a moderate potential for this species to occur within the project corridor. During the design and permitting

phase of the proposed project, a plant survey will be conducted of any areas that may be impacted to determine if TSPs need to be incorporated into the construction plans to protect this species. If four-petal pawpaw is found within the project footprint, TSPs will be incorporated into the contractor's bid documents. Therefore, the proposed project is not expected to adversely affect four-petal pawpaw or its preferred habitat.

#### **5.5.4 Fragrant prickly-apple (*Cereus eriophorus fragrans*)**

The fragrant prickly-apple is a columnar cactus endemic to south Florida that is listed as Endangered by the FWS and FWC. It may reach heights of 16 feet tall, though it frequently has a sprawling, more horizontal growth form. The fragrant, showy, pink to white flowers reach 4 inches long and bloom nocturnally. Fruits are orange-red and reach 2 inches in diameter.

Fragrant prickly-apple can be found growing on dry sandy soil of coastal berms and early successional sand pine scrub and also on rockland hammock sites. In 1984, only one remaining population of this species was known from a short strip of land in St. Lucie County, with a second population having recently been extirpated from Malabar in Brevard County. Fragrant prickly-apple has been documented in Savannas Preserves State park and Walton Scrub Reserve.

Since populations exist in lands adjacent to the corridor, there is a moderate potential for this species to occur within the project corridor. During the design and permitting phase of the proposed project, a plant survey will be conducted of any areas that may be impacted to determine if TSPs need to be incorporated into the construction plans to protect this species. If fragrant prickly apple is found within the project footprint, TSPs will be incorporated into the contractor's bid documents. Therefore, the proposed project is not expected to adversely affect fragrant-prickly apple or its preferred habitat.

#### **5.5.5 Johnson's Seagrass (*Halophila johnsonii*)**

Johnson's seagrass is listed as Threatened by the FWS and not listed by the FWC. It can be identified by its smooth margins, spatulate leaves in pairs 0.25 to 1 inch long, a creeping rhizome with petioles, sessile female flowers, and longnecked fruits. A difference between Johnson's seagrass and other similar seagrass species are its distinct asexual reproduction and leaf shape and form. Johnson's seagrass is known to reproduce only asexually and may be limited in distribution because of this characteristic.

Johnson's seagrass prefers to grow in coastal lagoons in the intertidal zone, deeper than many other seagrasses. It does not do as well in the intermediate areas where other seagrasses thrive. This species has been found in coarse sand and muddy substrates and in areas of turbid waters and high tidal currents. Johnson's seagrass is more tolerant of salinity, temperature, and desiccation variation than other seagrasses in the same area.

Johnson's seagrass has a very limited distribution and is the least abundant seagrass within its range. It has a disjunct and patchy distribution along the east coast of Florida

from central Biscayne Bay to Sebastian Inlet. The largest patches have been documented inside Lake Worth Inlet. The southernmost distribution is reported to be in the vicinity of Virginia Key in Biscayne Bay. Critical habitat has been designated for Johnson's seagrass and includes substrate and water in the following ten portions of the Indian River Lagoon and Biscayne Bay:

- North of Sebastian Inlet Channel
- South of Sebastian Inlet Channel
- Fort Pierce Inlet
- North of St. Lucie Inlet
- Hobe Sound
- South side of Jupiter Inlet
- A portion of Lake Worth Lagoon north of Bingham Island
- A portion of Lake Worth Lagoon, located just north of the Boynton Inlet
- A portion of northeast Lake Wyman, Boca Raton
- A portion of Northern Biscayne Bay

Johnson's seagrass has a low potential of occurrence within the project corridor due to its limited range and limited activities over waterways. During the design and permitting phase of the proposed project, a seagrass survey will be conducted of any areas that may be impacted to determine if TSPs need to be incorporated into the construction plans to protect this species. If Johnson's seagrass is found within the project footprint, TSPs will be incorporated into the contractor's bid documents. Therefore, the proposed project is not expected to adversely affect Johnson's seagrass or designated Critical Habitat.

### **5.5.6 Lakela's Mint (*Dicerandra immaculata*)**

Lakela's mint is an aromatic, low shrub listed as Endangered by the FWS and FWC. Young plants are erect or nearly so and as they mature they form dome-shaped masses. They grow to a height of approximately 1.5 feet. Leaves are opposite, but with short leafy shoots giving the appearance of being whorled. Both the upper and lower surfaces of the leaves are covered with fine dots. Flowers are produced singly or in threes from the mid and upper axils. Flowers are 0.6 - 0.8 inches long, green in color, with maroon or purple tints. Fruit is a pale-colored, rounded nutlet approximately 0.04 inches in length.

Lakela's mint is extremely rare and endemic to the Atlantic Coastal Ridge of Florida. It is known to occur naturally only in coastal scrub and pine scrub areas in Indian River and St. Lucie Counties, with most known plants in an area on the remnants of an ancient coastal dunes with an elevation of 45 feet. This area is approximately 1/2 mile wide and 3 miles long, lying between Vero Beach and Ft. Pierce. An experimental population was introduced into Hobe Sound National Wildlife Refuge in Martin County in 1991 and 1992. A small population has also been identified within the Hallstrom Farmstead in Indian River County.

Since populations exist in lands adjacent to the corridor, there is a moderate potential for this species to occur within the project corridor. During the design and permitting phase of the proposed project, a plant survey will be conducted of any areas that may be impacted to determine if TSPs need to be incorporated into the construction plans to protect this species. If Lakela's mint is found within the project footprint, TSPs will be incorporated into the contractor's bid documents. Therefore, the proposed project is not expected to adversely affect Lakela's mint or its preferred habitat.

### ***5.5.7 Tiny polygala (Polygala smallii)***

Tiny polygala is an endemic plant with only 11 known populations from southern St. Lucie County through Miami-Dade County that is listed as Endangered by the FWS and FWC. Seven of the existing populations currently occur on managed public lands, one of which is Jonathan Dickinson State Park.

It is a biennial herbaceous member of the milkwort family. This erect plant typically grows no taller than 8 cm (3.1 inches) in height and forms rosettes of 1 - 4 unbranched stems. Leaves are closely spaced, 1.5 - 5 cm (0.6 - 2.0 inches) in length. Flowers are numerous and green to yellowish-green in color.

Tiny polygala typically occurs in sand pockets of sand pine scrub, pine rocklands, slash pine, high pine, and well drained coastal scrub with high light levels and little accumulation of leaf litter. All documented habitats are xeric and prone to periodic fire disturbance. They are often in disturbed areas.

While pine rocklands, scrub, and other critical habitat areas must be periodically burned to reduce accumulation of organic litter, prevent exotic plant invasions, and prevent overshadowing of the herbaceous understory, it is unclear whether periodic burning specifically enhances growth of tiny polygala since it is short-lived with a shallow root system that is killed when fires occur. Thus, seed banks must repopulate areas following fires.

Since tiny polygala can be found in Jonathan Dickinson State park, there is a moderate potential for this species to occur within the project corridor. During the design and permitting phase of the proposed project, a plant survey will be conducted of any areas that may be impacted to determine if TSPs need to be incorporated into the construction plans to protect this species. If tiny polygala is found within the project footprint, TSPs will be incorporated into the contractor's bid documents. Therefore, the proposed project is not expected to adversely affect tiny polygala or its preferred habitat.

## **6.0 STATE LISTED SPECIES AND OTHER CONSIDERATIONS**

Though the primary purpose of this report is to address potential impacts to species protected under the federal Endangered Species Act, the following additional information is provided for consideration.

## 6.1 State Listed Species

Exhibit 6-1 identifies all the state listed species not previously discussed that potentially could be encountered in the vicinity of the project corridor.

Station alternatives are predominately within built up urban areas with limited habitat availability. Likewise, improvements along the mainline would be restricted to the areas within the existing rail right of way. Most wildlife is mobile and would temporarily vacate areas during construction to available adjacent habitat, returning after project completion. Several birds listed by the FWC, particularly wading birds, could be encountered within the project area. Though none of these species were observed during field visits, most of them likely use habitat surrounding the FEC corridor as foraging grounds. Since the project will not alter foraging areas, no impacts are anticipated to wading bird populations.

If the burrowing owl (*Athene cunicularia*) or gopher tortoise (*Gopherus polyphemus*), which was observed on at least one alternative site location, maintains a nest or burrow within the project limits or a construction staging area, a relocation or take permit may need to be obtained from the FWC if impacts to the nest or burrow cannot be avoided.

Several species of state listed plants may be in the project vicinity. During project design and permitting, a detailed plant survey will be conducted of any areas that may be impacted by construction and the necessary procedures will be followed to obtain approvals and permits for unavoidable impacts to listed species.

## 6.2 Other Considerations

The majority of the project corridor is highly developed and general observations in the project area include the typical complement of species adjusted to living in urban disturbed areas such as blue jays, common grackles, ground doves, squirrels, and anoles. In natural areas along the corridor common species that would be expected are white-tailed deer, opossums, eastern cottontail rabbits, marsh rabbits, foxes, otters, raccoons, pygmy rattlesnakes, ospreys, red-shouldered hawks, and wild turkeys.

The potential of increased wildlife mortality associated with the increase in number of trains and speeds along the rail line was also reviewed. This project would add two north bound and two south bound commuter trains per day and increase train speeds by approximately 20 mph. The trains would be operating on an existing active rail system and wildlife along this corridor is acclimated to the presence of trains. Although there are no dedicated wildlife crossings, overpasses, or underpasses there are a number of drainage pipes and culverts along the corridor ranging in size from 18" to 84" that provide the opportunity for animals to cross the rail. These pipes would remain in place.

Exhibit 6-1  
 State Listed Species Potentially within Project Corridor

Common Name	Scientific Name	County								Status	Impact Potential	
		Duval	St. Johns	Flagler	Volusia	Brevard	Indian River	St. Lucie	Martin			Palm Beach
<b>Mammal</b>												
Florida black bear	<i>Ursus americanus floridanus</i>	X	X	X	X						T	None
Florida mouse	<i>Podomys floridanus</i>			X	X	X	X	X	X	X	SSC	Low
Sherman's fox squirrel	<i>Sciurus niger shermani</i>	X	X	X	X	X	X	X	X	X	SSC	Low
<b>Bird</b>												
American Oystercatcher	<i>Haematopus palliatus</i>	X	X	X	X	X	X	X	X	X	SSC	Low
black skimmer	<i>Rynchops niger</i>	X	X	X	X	X	X	X	X	X	SSC	Low
brown pelican	<i>Pelecanus occidentalis</i>	X	X	X	X	X	X	X	X	X	SSC	Low
burrowing owl	<i>Athene cunicularia</i>					X	X	X	X	X	SSC	Moderate
Florida sandhill crane	<i>Grus canadensis pratensis</i>				X	X	X	X	X	X	T	Low
least tern	<i>Sterna antillarum</i>	X	X	X	X	X	X	X	X	X	T	Low
limpkin	<i>Aramus guaranauna</i>	X	X	X	X	X	X	X	X	X	SSC	Low
little blue heron	<i>Egretta caerulea</i>	X	X	X	X	X	X	X	X	X	SSC	Low
reddish egret	<i>Egretta rufescens</i>	X	X	X	X	X	X	X	X	X	SSC	Low
roseate spoonbill	<i>Ajaia ajaja</i>	X	X	X	X	X	X	X	X	X	SSC	Low
snowy egret	<i>Egretta thula</i>	X	X	X	X	X	X	X	X	X	SSC	Low
Southeastern American kestrel	<i>Falco sparverius paulus</i>	X			X			X	X		T	Low
tricolor heron	<i>Egretta tricolor</i>	X	X	X	X	X	X	X	X	X	SSC	Low
white ibis	<i>Eudocimus albus</i>	X	X	X	X	X	X	X	X	X	SSC	Low
<b>Reptile</b>												
Florida pine snake	<i>Pituophis melanoleucus mugitus</i>	X	X	X	X	X	X	X	X	X	SSC	Moderate
gopher tortoise	<i>Gopherus polyphemus</i>	X	X	X	X	X	X	X	X	X	T	Moderate
<b>Amphibian</b>												
gopher frog	<i>Lithobates capito</i>	X	X	X	X	X	X	X	X	X	SSC	Moderate
<b>Fish</b>												
Atlantic sturgeon	<i>Acipenser oxyrinchus</i>	X	X	X	X	X					SSC	None
Rivulus	<i>Rivulus marmoratus</i>					X	X	X	X	X	SSC	None
<b>Plant</b>												
Auricled Spleenwort	<i>Asplenium auritum</i>				X						E	Low
Bahama Brake	<i>Pteris bahamensis</i>									X	T	Low
Banded air plant	<i>Tillandsia flexuosa</i>									X	T	Low
Bartram's ixia	<i>Sphenostigma coelestinum</i>	X	X								E	Low
Burrowing Four-o'clock	<i>Okenia hypogaea</i>							X		X	E	Low
Canby's wild indigo	<i>Baptisia calycosa</i>		X								E	Low
Celestial Lily	<i>Nemastylis floridana</i>		X	X	X	X				X	E	Low
Chapman's sedge	<i>Carex chapmanii</i>		X								T	Low
Coastal Vervain	<i>Verbena maritima</i>		X	X	X	X	X	X	X	X	E	Low
cuplet fern	<i>Dennstaedtia bipinnata</i>					X					E	Low
Curtiss' looestrife	<i>Lythrum curtissii</i>		X								E	Low
Curtiss' Sandgrass	<i>Calamovilfa curtissii</i>					X					E	Low
Cutthroat Grass	<i>Panicum abscissum</i>									X	E	Low
Dentate lattice-vein fern	<i>Thelypteris serrata</i>									X	E	Low
Dye-flower	<i>Coreopsis integrifolia</i>		X								E	Low
Everglades flax	<i>Linum carteri</i>								X	X	E	Low
Flatwoods sunflower	<i>Helianthus carnosus</i>		X	X							E	Low
Florida Beargrass	<i>Nolina atopocarpa</i>		X		X	X					T	Low
Florida mountain-mint	<i>Pycnanthemum floridanum</i>		X	X							T	Low
Florida Peperomia	<i>Peperomia obtusifolia</i>							X	X		E	Low
Florida toothache grass	<i>Ctenium floridanum</i>	X	X								E	Low
Florida Tree Fern	<i>Ctenitis sloanei</i>								X		E	Low
Ft. George ladies'-tresses	<i>Spiranthes polyantha</i>	X									E	Low
Godfrey's Swamp privet	<i>Forestiera godfreyi</i>	X									E	Low
Golden Leather Fern	<i>Acrostichum aureum</i>				X					X	T	Low

Exhibit 6-1  
 State Listed Species Potentially within Project Corridor

Common Name	Scientific Name	County								Status	Impact Potential	
		Duval	St. Johns	Flagler	Volusia	Brevard	Indian River	St. Lucie	Martin			Palm Beach
Gopherwood buckthorn	<i>Sideroxylon lycioides</i>				X						E	Low
green milkweed	<i>Asclepias viridula</i>		X								T	Low
Hand Fern	<i>Ophioglossum palmatum</i>				X	X	X		X	X	E	Low
Hoary-pea	<i>Tephrosia angustissima</i>					X	X	X	X	X	E	Low
Large-flowered Rosemary	<i>Conradina grandiflora</i>				X	X	X	X	X	X	T	Low
many-flowered grasspink	<i>Calopogon multiflorus</i>									X	E	Low
Meadow Jointvetch	<i>Aeschynomene pratensis</i>									X	E	Low
peperomia	<i>Peperomia humilis</i>	X		X		X			X		E	Low
Piedmont Jointgrass	<i>Coelorachis tuberculosa</i>	X						X	X		T	Low
pineland lantana	<i>Lantana depressa</i>	X		X	X	X				X	E	Low
Pondspice	<i>Litsea aestivalis</i>	X	X								E	Low
plume polypody	<i>Polypodium plumula</i>				X						E	Low
purple balduina	<i>Balduina atropurpurea</i>	X									E	Low
Pygmy Pipes	<i>Monotropis reynoldsiae</i>		X								E	Low
Ray Fern	<i>Schizaea germanii</i>									X	E	Low
Redberry eugenia	<i>Eugenia confusa</i>								X		E	Low
Sand Butterfly Pea	<i>Centrosema arenicola</i>					X					E	Low
Sand-dune Spurge	<i>Chamaesyce cumulicola</i>		X		X	X		X	X	X	E	Low
Scrub Bluestem	<i>Schizachyrium niveum</i>							X			E	Low
Scrub pinweed	<i>Lechea cernua</i>			X	X	X	X	X	X	X	T	Low
Sea Lavender	<i>Argusia gnaphalodes</i>					X		X	X	X	E	Low
Silver Palm	<i>Coccothrinax argentata</i>									X	T	Low
Slender spleenwort	<i>Asplenium dentatum</i>				X						E	Low
southern lip fern	<i>Cheilanthes microphylla</i>	X									E	Low
Spreading Pinweed	<i>Lechea divaricata</i>					X			X	X	E	Low
St. John's Blackeyed Susan	<i>Rudbeckia nitida</i>		X								E	Low
Star Anise	<i>Illicium parviflorum</i>				X						E	Low
swamp plume polypody	<i>Polypodium ptilodon</i>				X						E	Low
Tampa Vervain	<i>Verbena tampensis</i>				X	X					E	Low
Titusville Balm	<i>Dicerandra thinicola</i>					X					E	Low
Unscented Vanilla	<i>Vanilla mexicana</i>								X		E	Low
water sundew	<i>Drosera intermedia</i>	X									T	Low
Yellow sunnybell	<i>Schoenolirion croceum</i>	X									E	Low

**Table Notes:**

E – Endangered

T – Threatened

SSC – Species of Special Concern

None - Project is outside of preferred habitat or range

"State Status" derived from Florida Fish and Wildlife Conservation Commission and Florida Department of Agriculture databases

There are very few studies on extending service on existing rail lines and most data is anecdotal. Several factors impede the collection of reliable data on railway related to wildlife mortality including the relative inaccessibility of railway lines; the lack of experienced individuals to observe, identify, and record railway kills; and the inherent difficulty of identifying and investigating railway wildlife incidents from moving locomotives. As a consequence, data sets on wildlife mortalities along railways may not have sufficient resolution to define issues and suggest mitigation strategies.

In Canada, it was found that spilled grain, track-side attractants, and preference of animals for open travel corridors were contributing to wildlife-train collisions. Grain was determined to be the most fatal attraction. This study indicated that while collisions with animals can have serious consequences for wildlife populations, relatively few trains strike wildlife on the tracks. However, studies in Spain, the Netherlands and Czech Republic have indicated that wildlife mortality due to collisions with trains can be significant, with mammals and birds particularly vulnerable.

Likewise, in a study of elephant mortality due to trains in India, it was surmised that increased speed resulted in increase braking distance, reducing the chances of stopping the train in time to prevent an accident. Therefore, trains running at high speeds may increase the chances of accidents. Increased train frequency was also speculated to have an impact on elephant mortality. However, the most significant finding was that for accidents for which the time is known, all occurred between 6pm to 6am, making time a prime factor to be considered.

Research primarily shows that there is species-specific, non-uniform distribution of wildlife mortalities along transportation corridors and that each species and situation must be handled on a case by case basis. Animal behavior, environmental factors (such as snow depth and temperature), railroad characteristics, and railroad use (speed/frequency) are all important factors that affect the number of train/wildlife conflicts.

Mitigation strategies which could be employed include: 1) concentrating on identified problem areas; 2) instructing train crews to report wildlife incidents; 3) removing carcasses from right-of-way to reduce scavenging; 4) removing spilled attractants (e.g., grain) in a timely manner; 5) reducing attractant vegetation on right-of-way; and 6) sharing data among jurisdictions.

A high level of wildlife mortality has not been reported along this corridor and the increase in the number of trains and train speeds would be relatively minimal. The schedule for the proposed commuter rail also show them to be operating mostly during the daylight hours. Therefore, the increase in the number of trains and train speeds is not expected to result in a significant increase of wildlife mortality along the corridor.

## 7.0 CONCLUSIONS AND RECOMMENDATIONS

This Endangered Species Biological Assessment was prepared in compliance with Section 7 (c) of the Endangered Species Act of 1973, as amended in order to document the federally listed endangered or threatened species that may be affected by this project and to document how the unavoidable adverse effects to these species may be minimized.

Literature review, GIS analysis, resource agencies coordination, and field surveys were conducted to identify threatened or endangered species that may potentially occur within the project area.

A total of 1 amphibian, 8 reptiles, 9 birds, 2 fish, 5 mammals, and 10 plants are listed as federally endangered or threatened species that may occur within the nine counties along the FEC corridor. Of the species considered, the puma, West Indian manatee, bald eagle, Florida scrub jay, red-cockaded woodpecker, eastern indigo snake, Carter's mustard, Florida perforate cladonia, four-petal pawpaw, fragrant prickly-apple, and tiny polygala have a moderate potential of occurring along the project corridor. All others have a low potential of occurrence in the project corridor.

During the design and permitting phase of the proposed project, a specific wildlife survey will be conducted to determine if any Federally-listed species are routinely using the areas proposed for construction. If so, the appropriate TSPs will be incorporated into the contractor's bid documents to ensure protection of the listed species. Standard contract language should also be included on the construction plans indicating that "threatened and endangered mammals, reptiles, and birds may migrate through the area and that the contractor shall comply with all federal and state requirements regarding threatened and endangered species and all applicable FDOT Standard Special Provisions."

Primary wildlife issues associated with the proposed project include: potential effects to listed species and their habitat from construction of the curve replacement track and proposed stations, and the potential for increased wildlife mortality due to conflicts with high-speed trains. Based on this assessment, construction and operation of the proposed project is unlikely to adversely affect any Federally-listed or State-listed endangered or threatened species or FWS designated "Critical Habitat". Therefore, the proposed project is consistent with the Endangered Species Act.

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